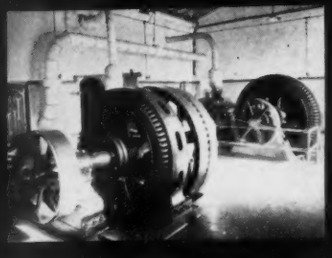
JULY, 1933

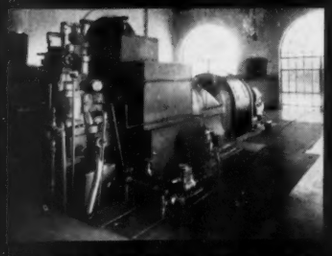
COTTON

Serving the
TEXTILE INDUSTRIES

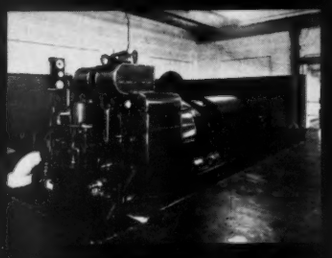
ROBERT AND COMPANY, INC. HAS HANDLED EVERY INSTALLATION CONTRACT SINCE 1920.



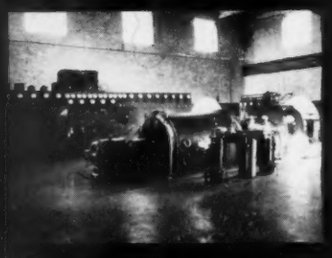
1915—PLANT WITH ITS ORIGINAL EQUIPMENT OF ENGINE TYPE GENERATORS.



1921—FIRST ADDITION, A 625 K.V.A. TURBO GENERATOR WITH CONDENSER.



1926—SECOND ADDITION, A 1875 K.V.A. TURBO GENERATOR.



1930—THIRD ADDITION, A 2500 K.V.A. UNIT WITH SWITCHBOARD.

A Series of

POWER EXPANSIONS

Under One

Engineering Consultant

SINCE 1921 the successful growth of the municipal power plant at Gainesville, Florida, has called for periodic enlargements in generating capacity. Each time Robert and Company, Inc., have been engaged as consulting engineers.

With each increase in generating capacity, Robert and Company, Inc., also supervised the layout and installation of Oil Storage, Spray Ponds and Boiler Installations.

The *perfect coordination* of this plant over a number of years proves decisively the advantages of expansion under the supervision of one engineering consultant.

During April, 1933, Robert and Company, Inc., received their seventh contract over a period of twelve years from the city of Gainesville . . . . (retained for a boiler plant enlargement)—another tribute to the outstanding scientific efforts of this concern.

ROBERT AND COMPANY, INC.
Architects and Engineers
ATLANTA, GEORGIA

Table of Contents, Page 17 **KNITTING SECTION, PAGE 75** Advertisers' Index, Page 120.

Veeder-Root PICK COUNTERS

925
DAY
NIGHT
432
SUPPORTED BY 50 YEARS OF COUNTING MACHINE ENGINEERING
OVER 300,000 IN USE .. ONE ON EVERY THIRD LOOM IN THE UNITED STATES
EMBODYING EVERY NEW PRINCIPLE IN PICK COUNTERS . . . EACH AND ALL ORIGINATED BY VEEDER-ROOT
INTERCHANGEABLE .. .. INSTALLATIONS NEVER OBSOLETE . CHOICE OF FIVE TYPES . SERVICE FROM OFFICES NORTH AND SOUTH. GUARANTEED BY WORLDS LARGEST MANUFACTURERS OF COUNTING DEVICES

TEXTILE COUNTER SPECIALISTS

Veeder-Root INCORPORATED HARTFORD, CONN.

SOUTHERN OFFICE GREENVILLE, S. C.

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year; $2.00 for three years; Canada, $1.50 per year; Foreign countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.

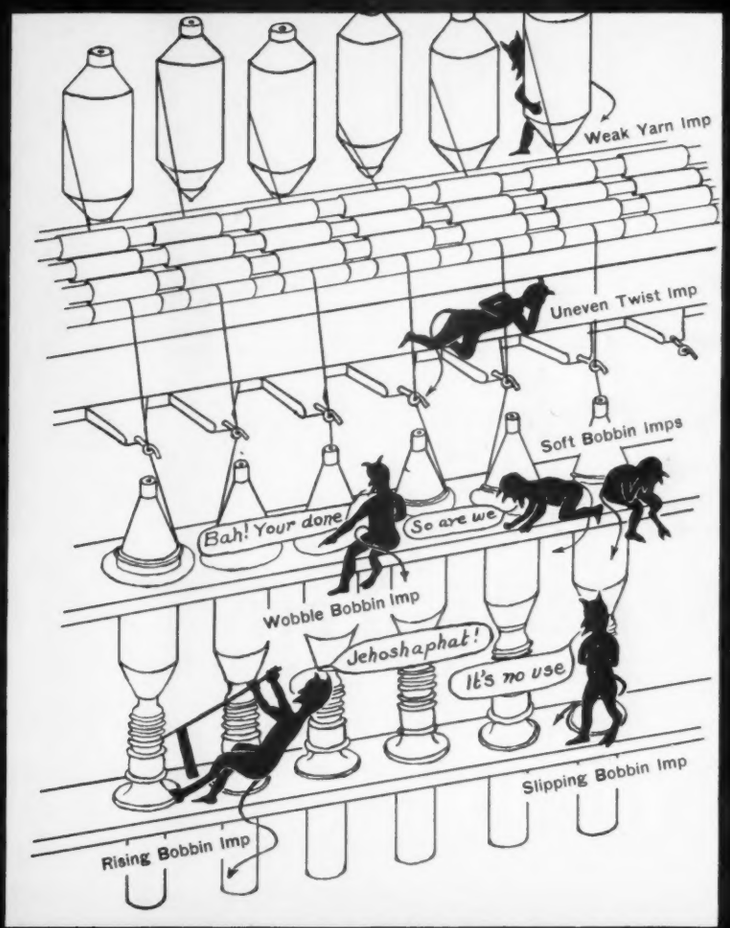
Lament of the Spinning Room Imps

It can't be done!
No devilish prank,
No impish fun,
No mighty yank
Will pry it loose.

That bobbin sticks;
No wobble now.
We know no tricks
That show us how
To pry it loose.

No rising up;
Soft bobbins gone;
An even twist.
No imp yet born
Can pry it loose.

Our day is done,
Our jobs are lost;
We're on the run,
Whate'er the cost
We must vamoose.



The Reason

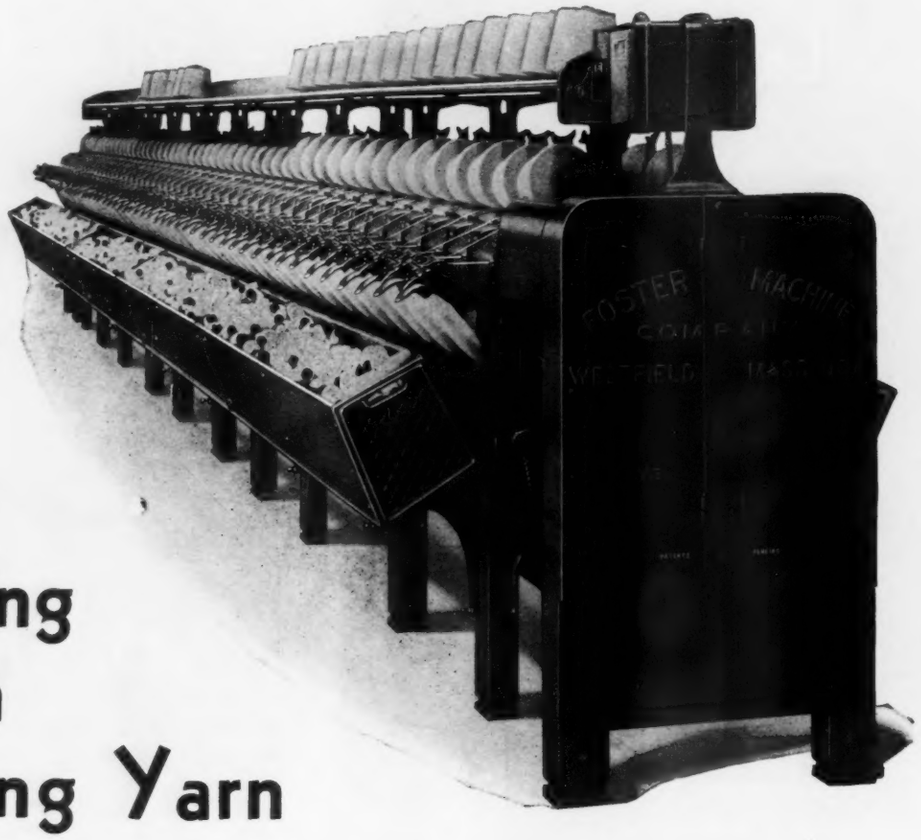
The New Stimpson Patent Bushing for Draper Bobbins MAKES IT IMPOSSIBLE for the Bobbin to Rise on a Stimpson Patent Clutch Spindle

Together—this Stimpson Bushing and Stimpson Clutch Spindle—are the Only Spinning Combination that PROTECTS YOU from the Evils—One and All—of a Rising, Wobbling, Slipping Bobbin

DRAPER CORPORATION

Hopedale Massachusetts

Southern Offices Atlanta Ga and Spartanburg S C



Cone Winding Cotton Knitting Yarn

CONE WINDING the last process in the Spinning Mill making yarn for Knitting, is the Mill's most important process.

The care and skill put into the production of a high grade yarn is rendered nil if the finishing process is not up to date.

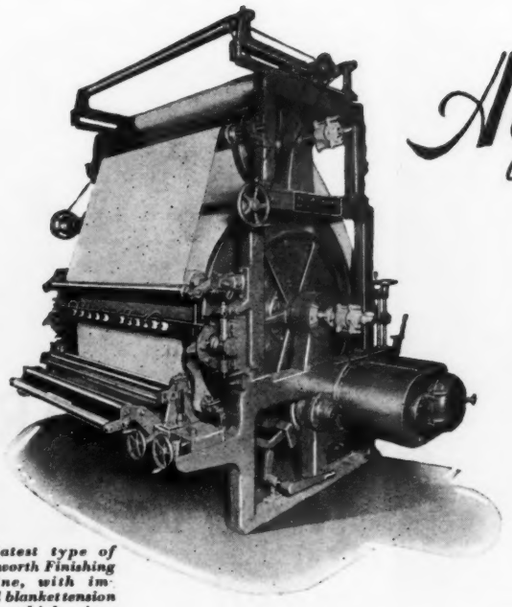
The Foster Model 102 Cone Winder is a refinement of former Cone Winding processes, retaining all the time-approved features of the Foster Cone of former Models and adding more delicate manipulation of the yarn while winding, exact lay of coils on the cone surface to reduce variation in tension from the cone on Knitting Machine and additional slub-catching, making the 102 Foster Cone more than ever before the

"Standard Knitting Package"

Foster Machine Company

WESTFIELD, MASSACHUSETTS.

FRED P. BROOKS, REPRESENTATIVE, P. O. BOX 941, ATLANTA, GA.



The latest type of Butterworth Finishing Machine, with improved blanket tension device which gives greater adjustment to blanket and insures the blanket giving a maximum of service. This machine plays an important part in good Sanforising.

Again we say

Why this preference for the **Butterworth Sanforizer?**

Because

Right now we are building 4

more Butterworth Sanforizers for plants in New England, the Middle Atlantic, and Southern States.

The answer must be in the *performance* of the Butterworth Sanforizer.

In addition to the four Sanforizers now being built we have made Sanforizing Equipment for the Erwin Cotton Mills, West Durham, N. C.—The Union Bleachery, Greenville, S. C.—Pepperell Manufacturing Co., Lewiston, Maine and Lindale, Ga.—Delta Finishing Co., Philadelphia—Lanett Bleachery & Dye Works, Lanett, Ala.—North Carolina Finishing Co., Salisbury, N. C.—Ramapo Finishing Corp., Sloatsburg, N. Y., and Ware Shoals Mfg. Co., Ware Shoals, S. C.

—quite a list to show preference for the Butterworth Sanforizer. And to make it more impressive, the Erwin Cotton Mills are now operating 4 Butterworth Sanforizers and the Union Bleachery 3.

Our engineers will be glad to discuss with you any questions pertaining to the Sanforizing of your products. Literature on the Butterworth Sanforizer will be sent promptly.

H. W. BUTTERWORTH & SONS CO.

Established 1820

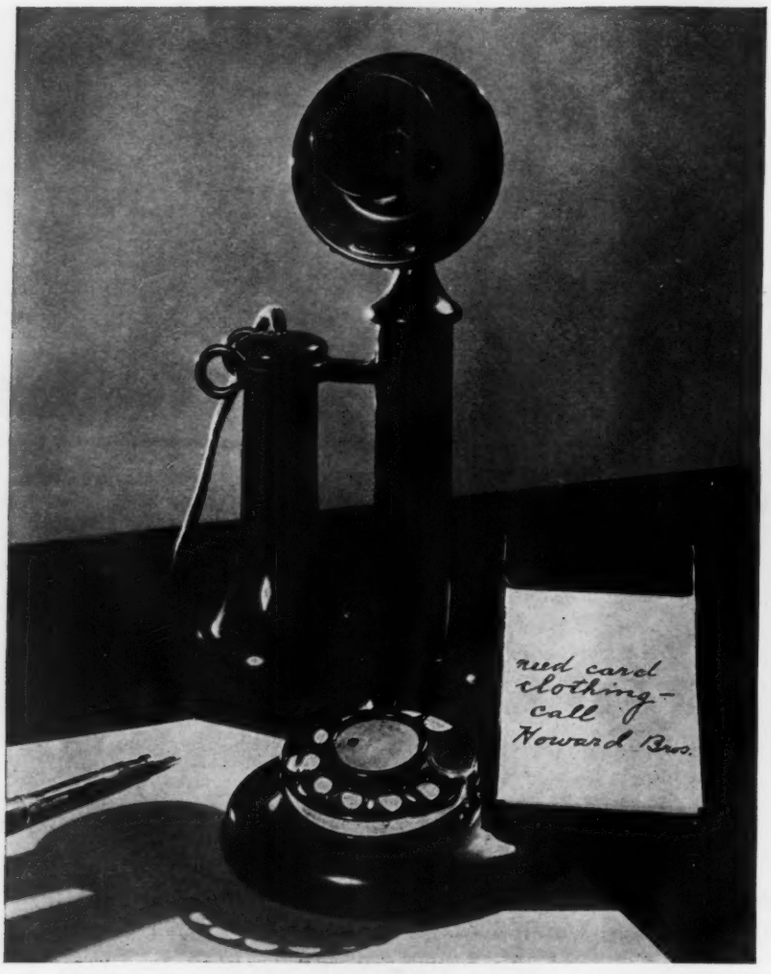
PHILADELPHIA, PA.

PLANTS *at* PHILADELPHIA *and* BETHAYRES, PA.

New England Office:	*Southern Office:*	*In Canada:*
TURKS HEAD BUILDING	JOHNSTON BUILDING	W. J. WESTAWAY CO.
Providence, R. I.	Charlotte, N. C.	Hamilton, Ontario

BUTTERWORTH *Finishing* MACHINERY

A COMPLETE LINE OF RAYON AND FINISHING MACHINERY FOR THE TEXTILE INDUSTRY



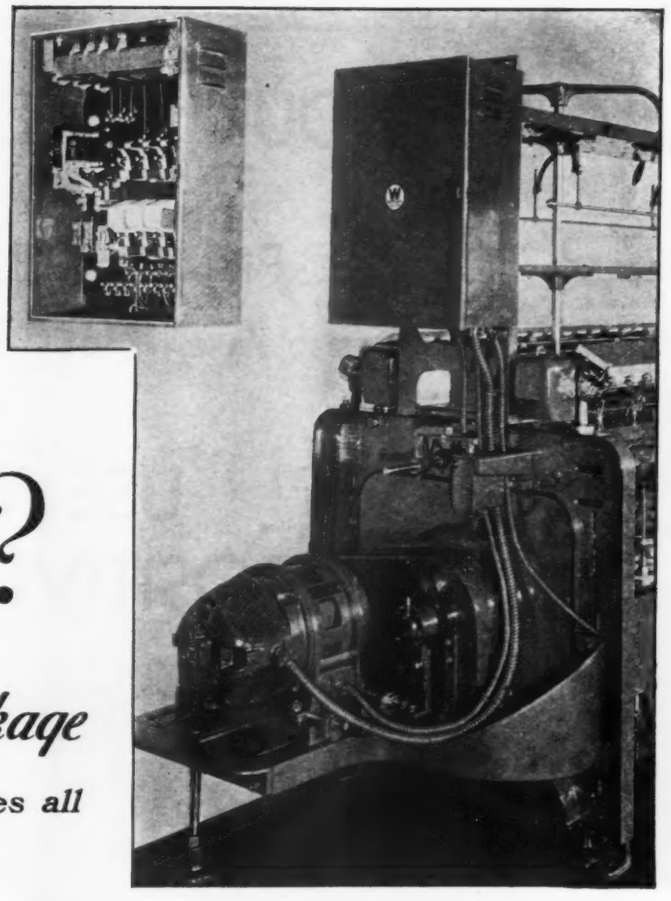
When CARDS *that were idle need* CLOTHING *in a hurry*

. . . . remember that Howard Bros., even during dull times, have kept up their inventory and are set up as always to deliver TUFFER Card Clothing overnight — yes, often quicker than that — to almost any mill east of the Mississippi. . . . No doubt idle cards have been robbed of their clothing. As these cards go back into service, you'll need card clothing on short notice — and you'll want good clothing that will protect yarn quality and production costs. TUFFER fills the bill on both counts. Branch offices and warehouses have been established at strategic textile centers within easy reach of your 'phone. As for quality, TUFFER has the patented foundation which resists stretching, the tough, sharp wire that stays sharp. Get in touch with your nearest Howard office so that you'll have all the facts when a rush order comes along.

HOWARD BROS. MFG. CO. WORCESTER, MASS.

Southern Plant: 244 Forsyth St., Atlanta, Georgia. Branch Offices: Dallas, Texas; Philadelphia, Pa.; Washington, D. C.

TRADE MARK TUFFER REG. U.S. PAT. OFF.



W-W Two-Speed Drive. Control Box shown both open and closed.

What's NEW?

The Whitin Large Package Spinning Frame embodies all late developments. These include:

Whitin-Casablancas Better Drafting System.

The W-W Two-Speed Motor Drive (patent applied for) which permits a production increase of ten to fifteen percent.

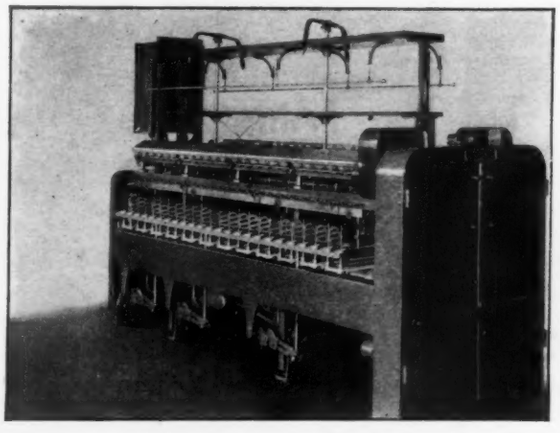
The Traversing Threadboard, for regulated yarn tension control.

High speed, spring tempered spindles, of large oil capacity.

Crys-steel Rings, the ring without a peer.

also Screw Joint Steel Rolls — Enclosed side rail panels
Metal-bound creels — Ball-bearing Pitman rolls

Exhibition Large Package Whitin Frame containing all latest improvements



Whitin Spinning Frames have always been the *standard* for the industry.

They will continue to be the standard

WHITIN
MACHINE WORKS
Whitinsville, Mass.

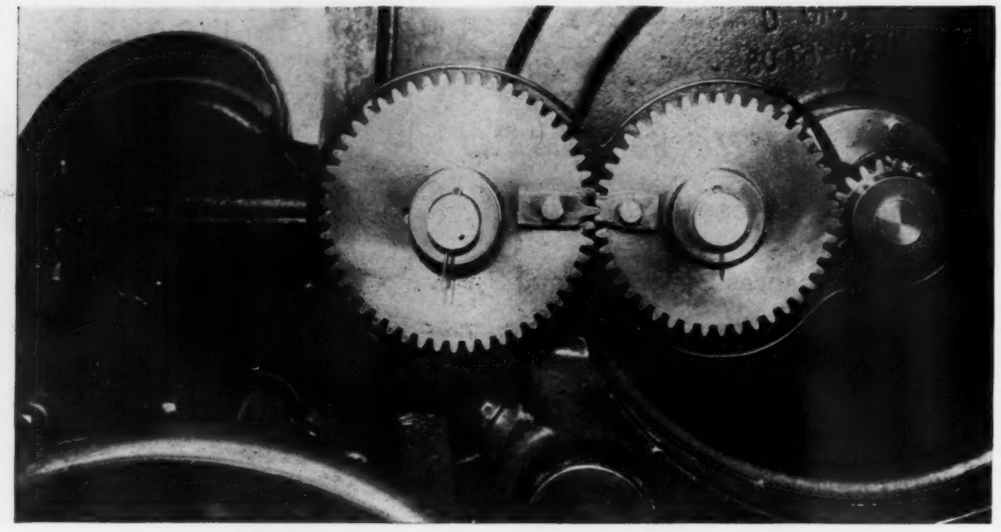
Charlotte, N. C.

Greenville, S. C. Atlanta, Ga.

GIVE YOUR PICKERS A CHANCE!

The Best Pickers Will Lose Laps When
The Laps Are Not The Right Length.

USE THE
ALDRICH POSITIVE STOP MOTION



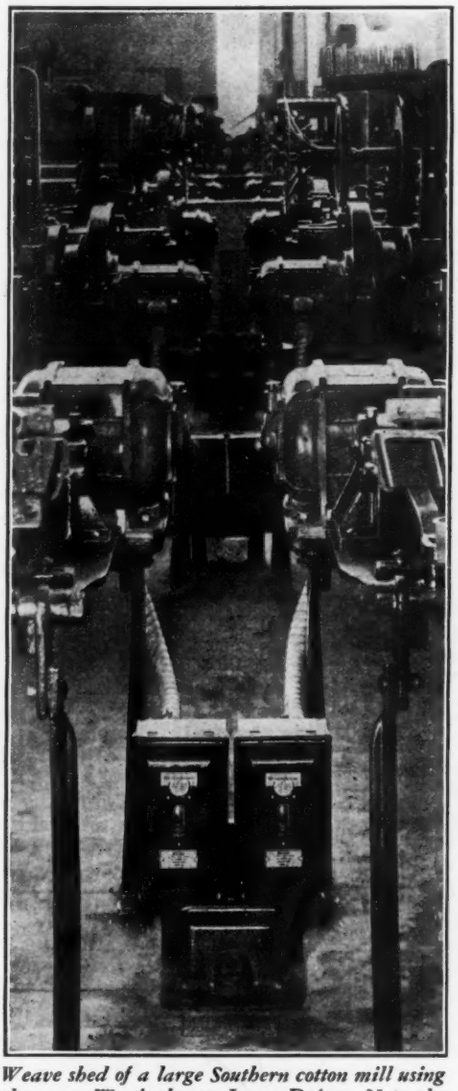
MAKE EVERY LAP
THE SAME LENGTH

Can Be Installed In Five To Ten Minutes

AldricH MachinE

Greenwood, **WorkS** South Carolina

DON'T DROP YOUR PROFITS *in* an obsolete Weave Shed



Weave shed of a large Southern cotton mill using the new Westinghouse Loom Drives. Note the neatness and compactness of the drive.

THE weave shed is a logical starting point for a modernization program. Any savings effected in this department will represent a considerable reduction in the total cost of finished cloth.

The modern Westinghouse Loom Drive is made to order for modern looms. With its new and improved mechanical and electrical characteristics, the Westinghouse Loom Drive matches them perfectly —in economy—in sturdiness—and in efficiency.

Motor

The motor has great mechanical strength to withstand vibration. It has liberal capacity for breaking in new looms and is enclosed to exclude lint. Windings are triple-guarded against moisture. High efficiency and power factor assure lowest power costs.

Starting Switch

The starting switch provides the highest degree of overload protection for the motor, yet completely eliminates the expensive production delays caused by a blown fuse or link.

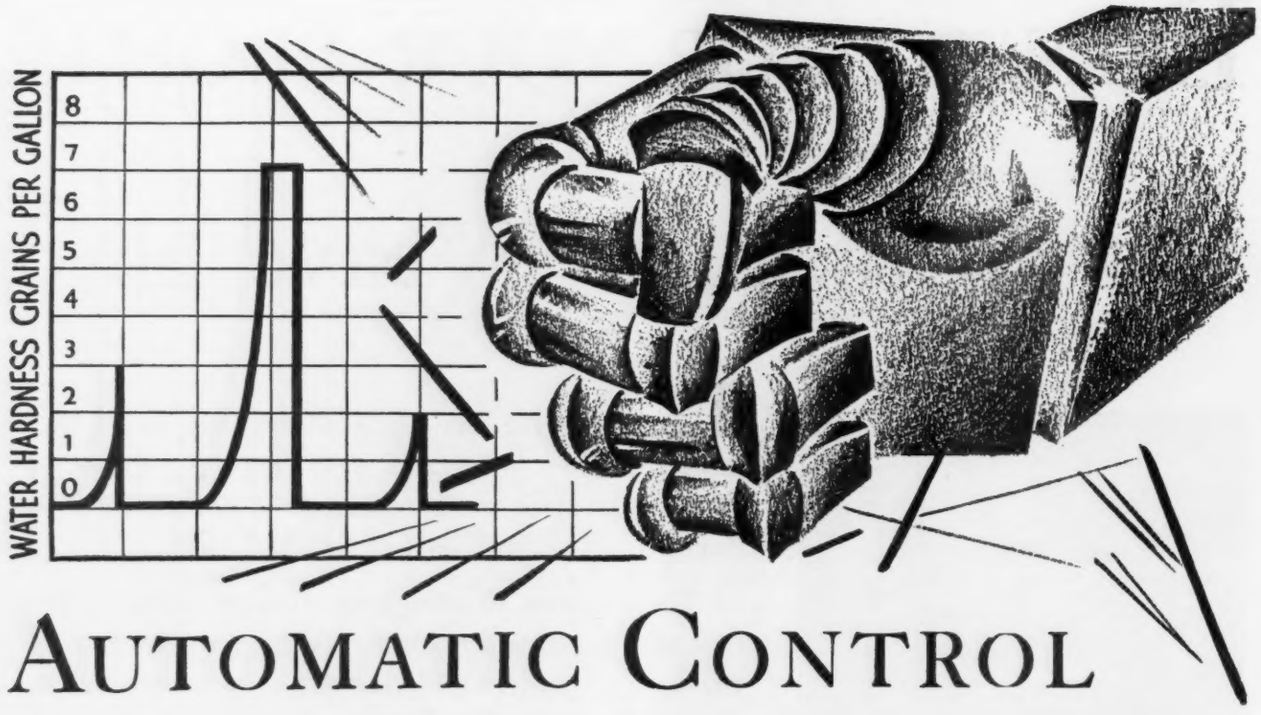
There are other important cost-saving features of the Westinghouse Loom Drive that will appeal to textile mill executives who are seeking reduced weave shed costs. Call or write our nearest sales office or simply mail the coupon.

Westinghouse

Quality workmanship guarantees every Westinghouse product

SEND FOR INFORMATION

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.
Gentlemen: Please send me a copy of L. 1289-A, Loom Motors and Control.
Name .....
Company .....
Address ..... T 79359
City ..... *State* ..... C 7-33



AUTOMATIC CONTROL *Smashes* these Costly Peaks...

Putting soft water under permanent electric control reduces costs, eliminates process troubles due to improper operation

WHEN a man can do his tasks perfectly at all times, he will no longer be a man but a machine. Errors are bound to creep into the work of the most careful of us.

And when that error is in the operation of water treating equipment, it is apt to be costly. "Shots" of imperfectly treated water entering into your process work harm the quality of your product in bleaching, in dyeing, and in all washing and cleansing operations. Supplies are wasted, too.

Now the production of soft water can be placed under permanent electric control. No more costly oversights — no more needless wastes.

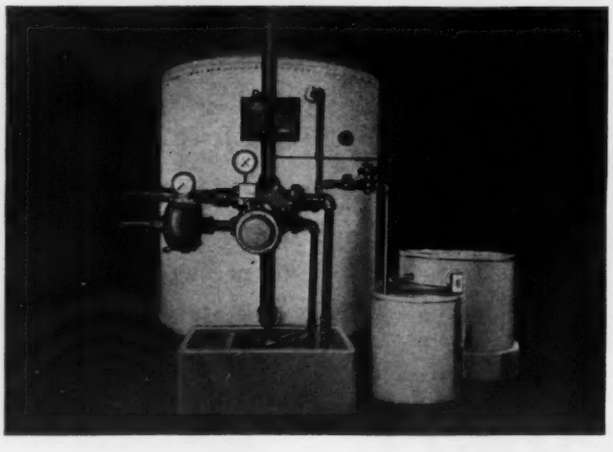
The development of Permutit's motor-driven single valve has made possible the fully automatic operation of zeolite water softeners. Mechanical precision has been substituted for the errors of human operation. Not only is automatic control available in new models, but present equipment can be converted to fully automatic operation at a modest cost.

So efficient is this, that it produces soft water at a lower cost per thousand gallons than ever before.

Write for descriptive bulletin. We shall be glad to include copies of "Reducing Textile Costs & Troubles" and "Water Filters & Filtration Equipment." They are free of cost or obligation. The Permutit Company, 330 West 42nd St., New York.

7 POINTS OF SUPERIORITY

1. Most efficient zeolite water softener ever built.
2. All operations automatically carried out under precise control.
3. Completely softened water—no overrunning, no under-regeneration.
4. Thorough washing and rinsing with minimum quantity of water assure clean, active zeolite.
5. Save salt—uses only the absolute minimum required.
6. Less floor space — more salt storage.
7. Automatic features can be applied to any existing zeolite water softener.

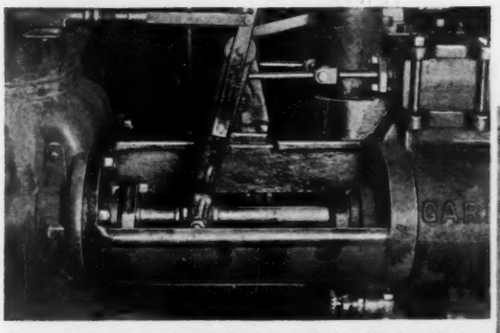


Permutit *Water Treating Equipment*

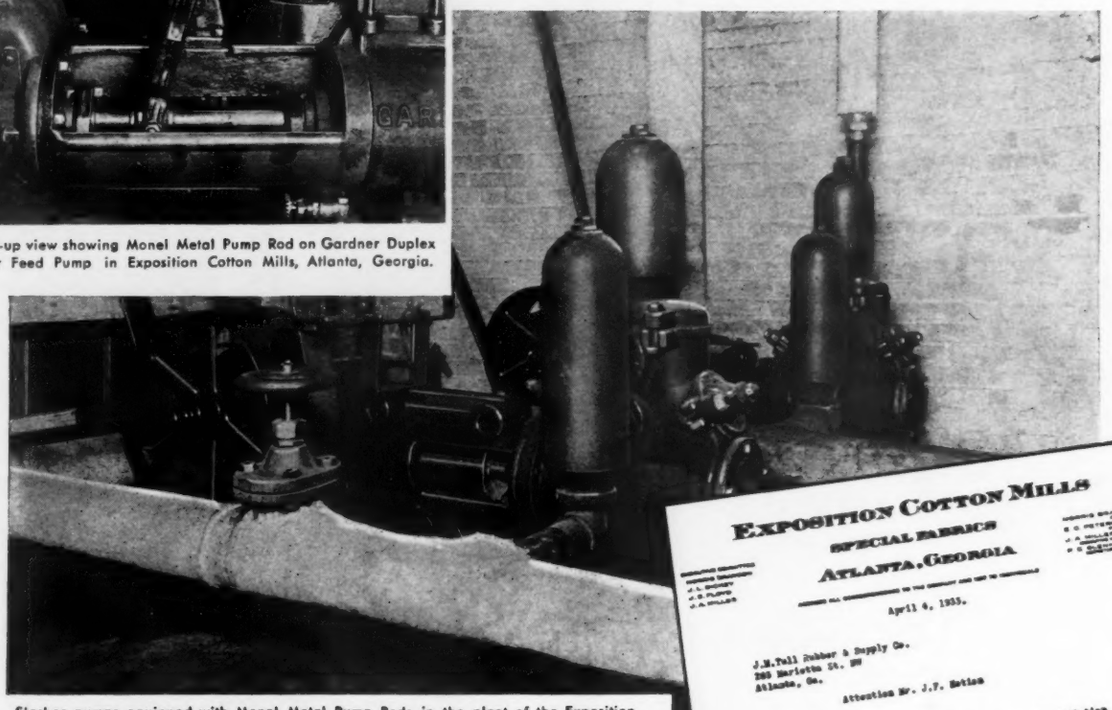
PAYS FOR ITSELF

These MONEL METAL PUMP RODS *need* LITTLE *or* NO RE-PACKING

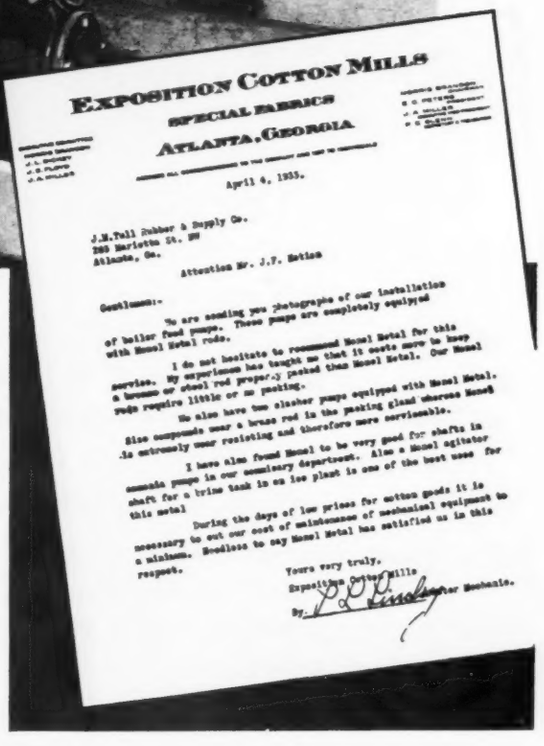
. . . says Georgia Cotton Mill



Close-up view showing Monel Metal Pump Rod on Gardner Duplex Boiler Feed Pump in Exposition Cotton Mills, Atlanta, Georgia.



Slasher pumps equipped with Monel Metal Pump Rods, in the plant of the Exposition Cotton Mills, Atlanta, Georgia. They handle hot starch solution for sizing yarn.



EXPOSITION COTTON MILLS
SPECIAL FABRICS
ATLANTA, GEORGIA

April 4, 1933.

J.H.Tull Rubber & Supply Co.
283 Marietta St. NW
Atlanta, Ga.

Attention Mr. J.F. Hatlan

Gentlemen:-

We are sending you photographs of our installation of boiler feed pumps. These pumps are completely equipped with Monel Metal rods.

I do not hesitate to recommend Monel Metal for this service. My experience has taught me that it costs more to keep a bronze or steel rod properly packed than Monel Metal. Our Monel Rods require little or no packing.

We also have two slasher pumps equipped with Monel Metal. Also compounds wear a brass rod in the packing gland whereas Monel is extremely wear resisting and therefore more serviceable.

I have also found Monel to be very good for shafts in ammonia pumps in our commissary department. Also a Monel agitator shaft for a brine tank in an ice plant is one of the best uses for this metal

During the days of low prices for cotton goods it is necessary to cut our cost of maintenance of mechanical equipment to a minimum. Needless to say Monel Metal has satisfied us in this respect.

Yours very truly,
Exposition Cotton Mills
By. [signature] Master Mechanic.

It is the little pits and abrasions in a pump rod that tear up the packing. So there's nothing really surprising in the fact that *these* pump rods at the Exposition Cotton Mills, Atlanta, Ga., need practically no re-packing...

For they're made of Monel Metal. And Monel Metal pump rods have a hard, flawless structure, tough and dense. They polish-in as smooth as glass. Friction is reduced to a minimum.

The smooth surface can't be pitted by rust. Monel Metal possesses excellent resistance to corrosion and abrasion and, as the letter above points out, it withstands ammonia, starches and brines. Monel Metal is also resistant to dye liquors, acids, alkalies, oils, soaps, etc.

But what you save in the cost of constant re-packing and the shut-down it involves, isn't the half of it.

Monel Metal pump rods outlast steel and bronze rods several times over in just plain wear and tear. Furthermore, because the packing *stays* packed you get more efficient use of power.

If steel-strong, glass-smooth Monel Metal pump rods reduce operating costs in this Georgia cotton mill they can surely save you, too, from the re-packing nuisance, cut down repair expenses and generally reduce your pumping costs. Let us tell you more about Monel Metal pump rods...let us give you specific price information...no obligation. It's well worth having...fill in the coupon below.

• • •

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York, N. Y.

THE INTERNATIONAL NICKEL CO., INC. C-7-33
67 Wall Street, New York, N. Y.

Please send me literature on Monel Metal Pump Rods, also send me price information. My requirements are:

Diameter _____ Length _____

_____ _____

We { have / have not } facilities for machining.

Company Name _____

Attention of _____

Street _____

finishers say

and **we** say it's...

VELVORAY

Big finishers too!... talk about their processes in a big way. Fact is, the FINISH is so good, we're all justified in our boasts.

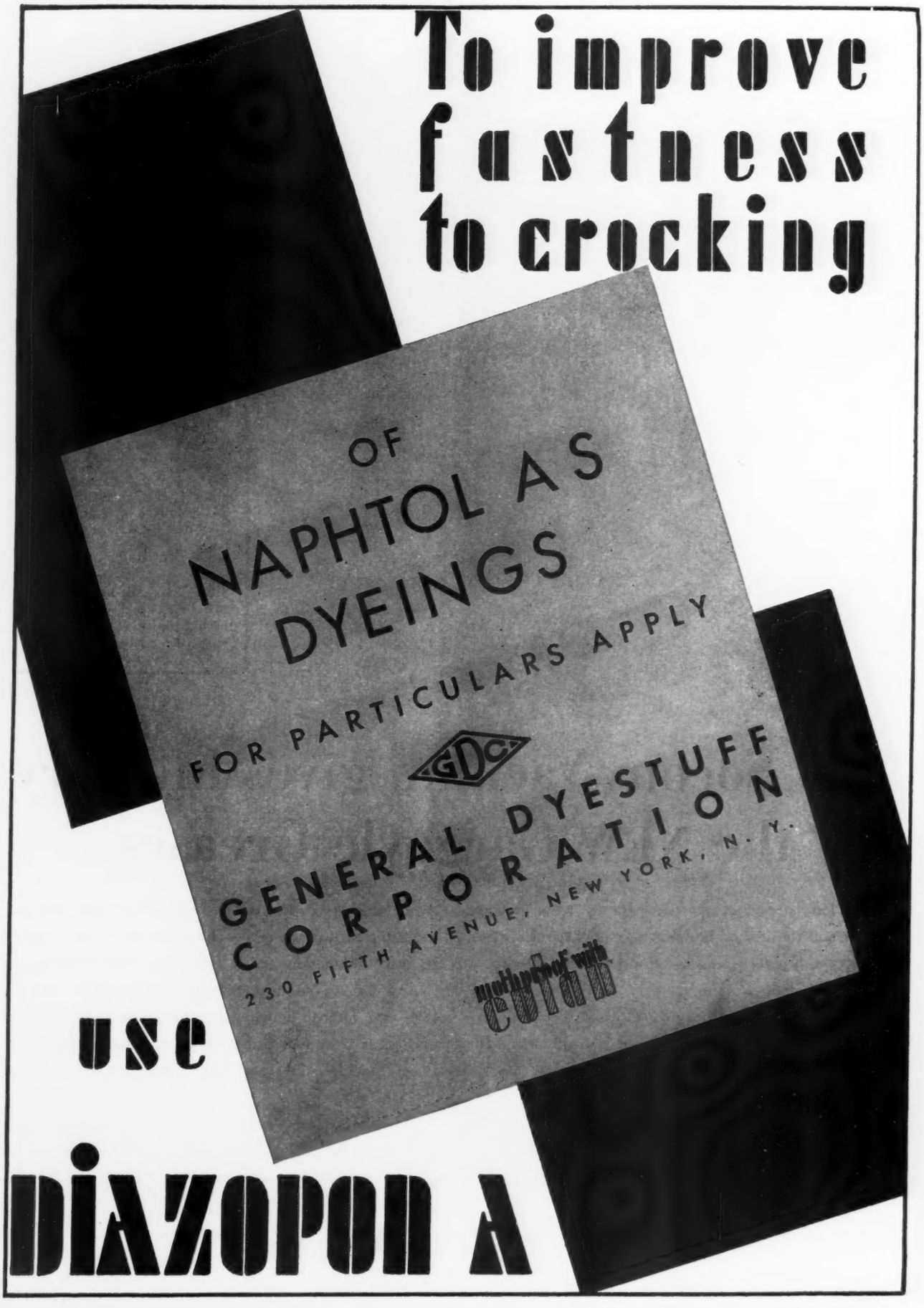
VELVORAY No. 1 is an "all-purpose" oil — invaluable for softening and finishing.

Pure dye or weighted Silks — Rayons and Cotton Goods — *all* show the superior penetrating and levelling action of VELVORAY No. 1 in the dye-bath.

Under VELVORAY No. 1 as a finishing treatment, weighted Silks are relieved of a harsh and brittle texture. Rayons and Silk Crepes are made mellow and drapey.

All of these materials are given a notably "full-bodied" finish — free of spots, "stickiness" and rancid odor.

- **Apply VELVORAY treatments! Blow about *your* finish!**


To improve fastness to crocking
OF
NAPHTOL AS
DYEINGS
FOR PARTICULARS APPLY
GDC
GENERAL DYESTUFF
CORPORATION
230 FIFTH AVENUE, NEW YORK, N. Y.
USE
DIAZOPON A

Socony-Vacuum laboratories are constantly at work—improving lubricants for today's equipment—developing new lubricants for the equipment of tomorrow.

For instance, steam-engine builders recently improved designs—increased temperatures and pressures. Socony-Vacuum then brought out new Gargoyle Super Cylinder Oils which improve machine operation and lower costs in plants powered by steam engines.

Again—industry's recent low profit margins helped create a demand for lubricants that could further reduce frictional power consumption. Socony-Vacuum met *this* need with new Gargoyle Vactra X Oils, all-purpose lubricants that have cut power consumption in practically every plant in which they have been used.

Now Socony-Vacuum gives Industry the NEW Gargoyle Greases

After a long period of severe operating tests in both Europe and the United States—Socony-Vacuum offers the NEW Gargoyle Greases—products fully worthy of the Gargoyle name.

In the manufacture of Gargoyle Greases, former methods of grease production have been radically changed. Ingredients, formulae, temperatures and pressures are held under constant control. Each Gargoyle Grease is held closely to a definite standard, assuring uniform products—products that meet the exact service conditions for which they are designed. In the new Gargoyle Greases you get the same high-grade oils—*the same dependable protection*—that you get in other Gargoyle Lubricants.

Any Socony-Vacuum representative will be glad to give you further information about Gargoyle Greases and other Gargoyle Lubricants—to suggest ways by which they can help lower today's costs in your plant.

GARGOYLE

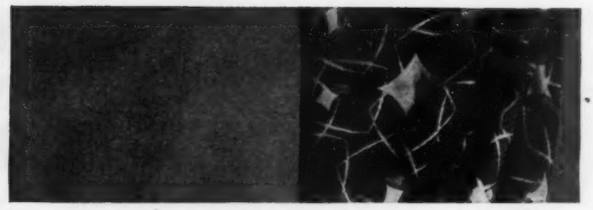
Lubricating Oils

Socony-Vacuum Corporation, 26 Broadway, New York City. Branches and distributors in principal cities throughout the world.

SOCONY-VACUUM

CORPORATION

MERGER OF STANDARD OIL COMPANY OF NEW YORK AND VACUUM OIL COMPANY



COTTON...

the fabric of the hour!

For the past several years cotton goods have been steadily growing in popularity. Designers and fashion experts have contrived to make them smart summer fabrics.

But "just any" cottons won't do. To meet the fastidious consumer demand, yours must be of the highest quality. They must be soft and supple. Plain colored or patterned, the dye job must be perfect. And in white cottons, they must be bleached to snowy whiteness.

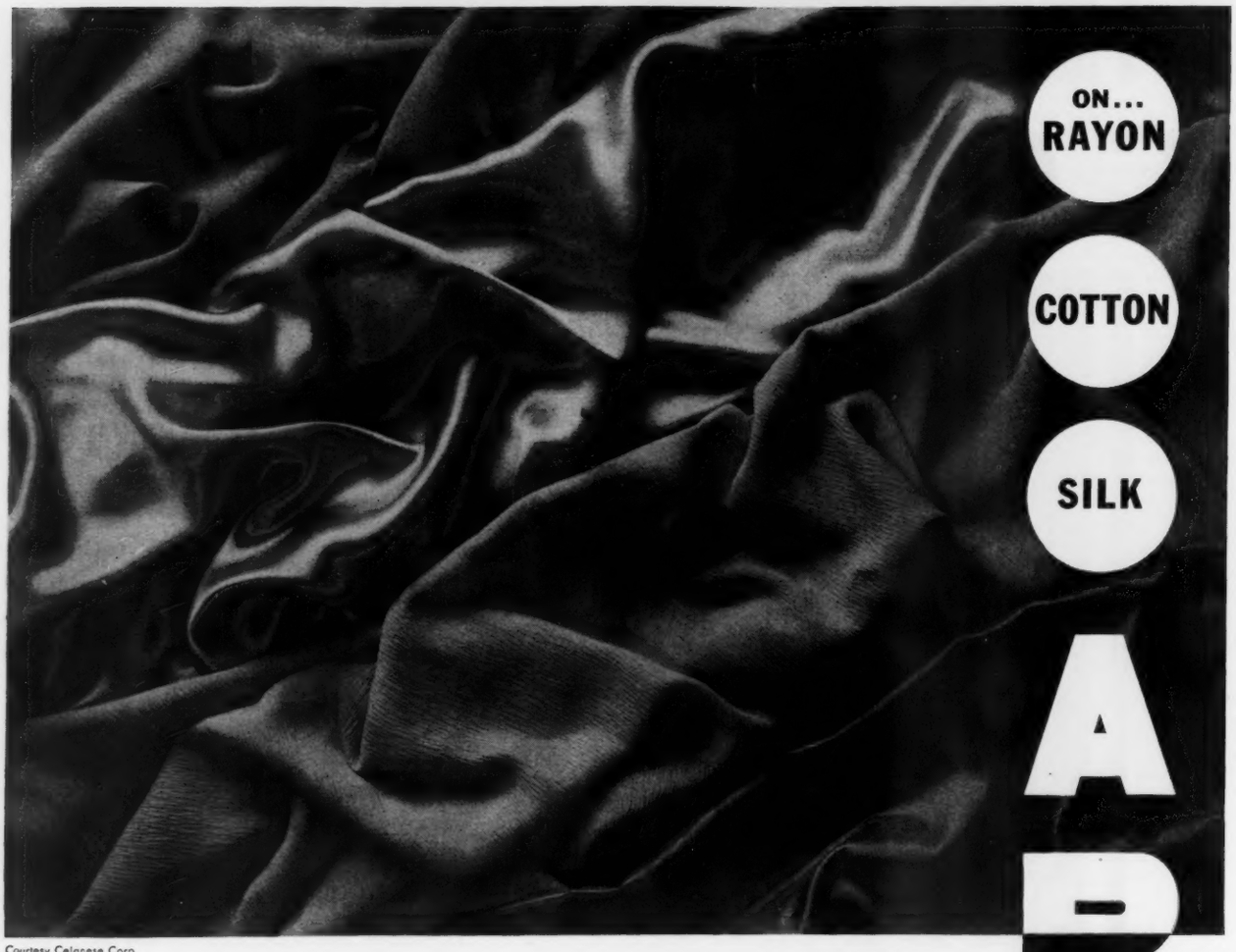
One important product that insures your cottons attaining such perfection is DIASTAFOR. This famous sizing and de-sizing agent strips all starch content. And it prepares fabrics for bleaching without a trace of discoloration, and for perfect dyeing. Diastafor is easy to handle . . . . . requires no change in plant set-up . . . . . or expensive machinery. Let our technical man advise you, or write to—

FLEISCHMANN'S DIASTAFOR

DIASTAFOR DEPARTMENT

STANDARD BRANDS INCORPORATED - 595 MADISON AVE., N. Y. C.

FOR VELVETY SOFTNESS



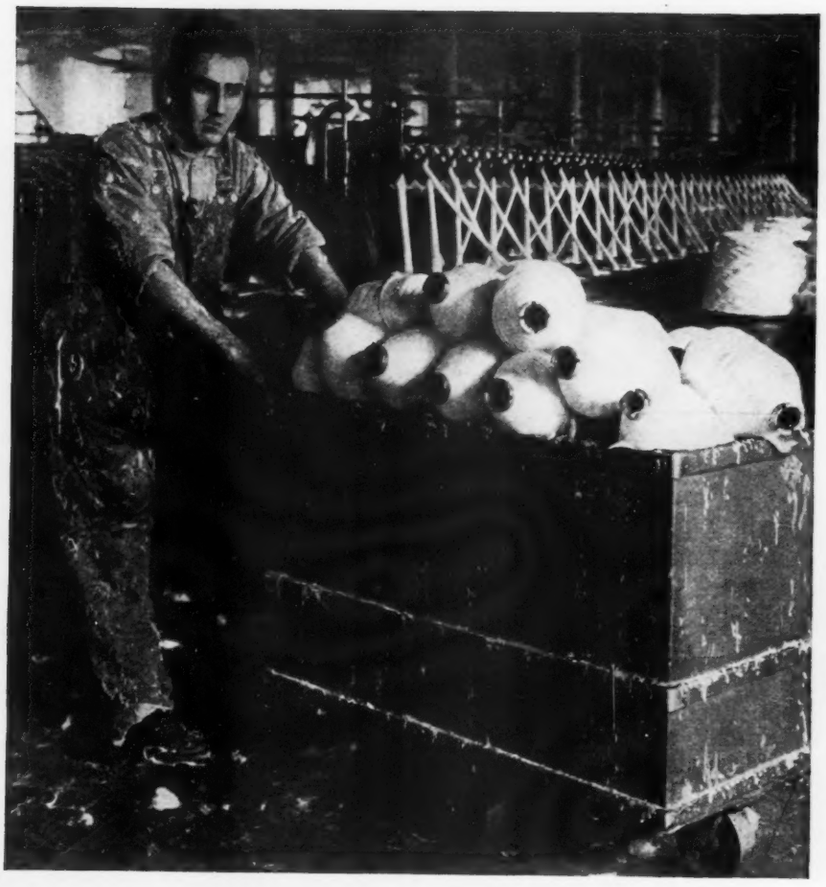
Courtesy Celanese Corp

TO rayon, cotton, Celanese and weighted silks, ARKOL imparts a velvety softness and warm hand not to be had with ordinary finishing oils. ● Used on mercerized cotton, ARKOL insures softness in the finished piece goods. ● On dyed Celanese—employed in the final rinse—ARKOL provides a full drape . . . . and ARKOL will make rayon skeins silky soft. ● Where ARKOL is used there is no stickiness, no marking off, no staining of paper wrappers and . . . . ARKOL is economical. ● For complete information write the Arkansas Company, Inc., Chemists to the Textile Industry, 233 Broadway, New York.

ARKOL

ARKANSAS CO · INC ·

SPRAY



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"CODE of CARDED YARN TRADE PRACTICES"

The following Code of Trade Practices was unanimously adopted on behalf of the Carded Yarn Group of the Cotton Textile Institute and the Cotton Yarn Merchants Association at a meeting held in the offices of the Cotton Textile Institute, 320 Broadway, New York City, on June 1st, 1927, and recommended to those engaged in the industry as embodying sound principles of business practice:

"I. It is a sound practice for a particular mill either (1) to make sales direct to manufacturing consumers or (2) to confine its accounts to one commission house for any given territory, or to work out a consistent combination of these two methods.

"II. It is not a sound trade practice for either a particular mill or any agent acting for it to quote at the same time different prices to different inquirers for the same yarn.

"III. It is not a sound trade practice for a mill to pay either directly or indirectly any compensation for selling other than not exceeding the usual 5% to commission houses and yarn merchants and not exceeding the usual 2% to brokers, nor to allow any cash discount exceeding the usual 3% for warp yarns or 2% for soft yarns for ten days. But in case of direct sales it is a sound trade practice to allow the usual discount not exceeding 3% on warp yarns or 2% on soft yarns for 30 days, but no discrimination or secret rebates by way of other discounts, commission, compensation or inducement. It is not a sound trade practice to share commissions either directly or indirectly with purchasers of yarns.

"IV. For purposes of this statement of 'Sound Trade Practices', a 'Commission House,' is one that handles yarn for confined accounts on strictly commission basis, rendering account sales for all transactions. 'Yarn Merchant' is a house that buys and sells yarn by simultaneous purchase and sale at the same price.

"V. It is sound practice for a particular house to function as a 'Commission House' and also as a 'Yarn Merchant.'

"VI. It is sound practice for a Commission House or Yarn Merchant to undertake in consideration of the commission paid it, to give its mills selling advice and to dispose of their products at the best obtainable prices.

"VII. Short selling and long buying on the part of the Commission House or Yarn Merchant are unsound trade practices.

"VIII. The accumulation of stocks on the part of commission merchants being speculative in principle and consequently to the disadvantage of both producers and consumers is an unsound Trade practice and should be eliminated by October 1st, 1927."

Running thru the splendid present day work of Conference and Concerted Action is the same clear thread that has carried thru every chart for successful commerce since the days of Mansfield.

The Code of 1927 re-stated a very old rule of living. Because we still believe that the discussion which accompanied it some six years ago made an approach to voluntary uniformity in practice which legislation will shortly make compulsory it is now

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JAMES E. MITCHELL COMPANY

Cotton Yarn Merchants

PHILADELPHIA

Vol. 97 **COTTON** No. 7

July, 1933

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ROBERT W. PHILIP, Editor

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Yarns and Knitted Fabrics

Vol. 97
No. 7

COTTON

July,
1933

The Cotton-Textile Code Under the Industrial Recovery Act

HISTORY in the making! Nothing so momentous for industry has ever occurred as the National Industrial Recovery Act, now in process of application. Cotton-textiles led all industry in submitting a code of fair competition under the Act, and received the first hearing under General Johnson last month. The final code as submitted at the close of the hearing, involving revolutionary fundamental changes in the industry's structure of operation, is published on page 22 of this issue in the form which required only the approval of President Roosevelt. Herewith are comments on the code and its application by the Editor, who attended the Washington hearings . . . .

THE cotton-textile industry was the first among the industries of the United States to respond in the presentation of a code of fair competition under the terms of the National Industrial Recovery Act, as passed by Congress — the most momentous legislative document of modern times, under which an Industry Recovery Administration was set up by the United States government to function under the new "partnership between government and industry" program outlined by President Franklin D. Roosevelt, and designed to be effective throughout the declared two-year period of emergency conditions. Under the terms of the Act, as is well known, each industry is to submit a code for itself, which, when approved by the administration and the President, will constitute the regulations under which the industry will operate during the emergency period.

Immediately upon the passage of the Industrial Recovery Act, the cotton-textile industry submitted its code, and subsequently was chosen as the first to present its recommendations in public hearing before General Hugh S. Johnson, administrator, and W. L. Allen, his deputy. These hearings occurred in the Department of Commerce Building in Washington from June 27 to June 30 inclusive, with George A. Sloan, president of The Cotton-Textile Institute, and Robert Amory, of the National Association of Cotton Manufacturers, and W. D. Anderson, of the American Cotton Manufacturers Association, the three sponsors of the cotton-textile code, presenting it at the public hearing on behalf of a committee of 20 designated by the Institute and the northern and southern associations to draft and present it. Several major and minor changes to the original code were offered by the cotton-textile committee during the hearing, and it was presented in its final form at the close of the hearing on June 30.

Personal attendance at the public hearing would be necessary properly to appreciate the tremendous significance of the occasion, which hardly could be presented in a written account hastily prepared to be included here. A crowd of approximately 1,000, composed largely of cotton-textile manufacturers, attended and everyone was uniformly impressed with the fairness and justice of the administrator and his deputy, and the sense of sincerity and earnestness exhibited in the extended discussions, which included presentations from the cotton manufacturers, representatives of organized and unorganized labor, and consumers.

Space and time limitations prevent here a detailed discussion of the hearings and of the items of the code. The code, as finally drafted and submitted is reproduced on page 22, and a careful reading of it will disclose its far-reaching effects and momentous importance. There will undoubtedly be, under the provisions of the code itself, additional provisions made and executed. These, as was true of the developments preceding and during the public hearings in Washington, are beyond the compass of our facilities for reporting promptly. The original code, however, represents the basis for the momentous changes in the structure of the industry and its operation, and affects every cotton mill as defined in the code; and some comment and interpretation of its more significant provisions may properly be made at this time.

Provisions of the Code

The purpose of the cotton-textile code, as is that of the National Industrial Recovery Act, is, during the period of the emergency, to reduce and relieve unemployment, improve the standards of labor, eliminate destructive competitive practices as affecting the public, employee and employer, relieve the effects of over-capacity, and otherwise rehabilitate the industry and increase the consumption of industrial and agriculture products by increasing pur-

chasing power.

To this end, a code of fair competition is presented, the most significant effects of which are (1) to fix the maximum hours of labor for employees (outside of the exceptions named in the code) at 40 hours per week; and the maximum hours of operation of productive machinery at two shifts of 40 hours each; (2) to establish a minimum wage for employees (outside of the exceptions named in the code) at $12 per week in the South and $13 per week in the North, for 40 hours of labor; and (3) the elimination from employment in the industry of all minors under the age of 16 years.

There is also provision for the reporting of statistics from individual mills, to and through The Cotton Textile Institute, Inc., as to wages and hours of labor, machinery data, and production, stocks and orders.

The effective date for the institution of the terms of the code is set for two weeks following the approval of the code by the President.

All Spinning and Weaving Mills Included

These and other provisions of the code are clearly and comprehensively defined in the terms of the code itself. The "cotton-textile industry", to which the code applies, is clearly defined to mean the manufacture of cotton yarns and/or cotton woven fabrics, whether as a final process or as a part of a larger or further process. No recognition being given of certain types of mills for which exceptions were asked at the public hearings. "Productive machinery", to which the limitations of two shifts of 40 hours per week apply, is clearly defined as spinning spindles and/or looms, with no reference to carding or other auxiliary machinery whose products are not salable or finished.

Another equally significant provision of the code is contained in Section VIII, which complies with the requirements of the National Industrial Recovery Act giving employees the right to organize and bargain collectively through representatives of their own choosing, etc.; that no employee and no one seeking employment will be required to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing, etc.

High praise was repeatedly given by General Johnson, the administrator, and W. L. Allen, his deputy, to the cotton-textile committee for its patriotic spirit and co-operative attitude in conforming to the requirements of the Act and the desires of the administration in the drafting of the cotton-textile code. The original code specified a minimum wage of $10 per week for the South and $11 per week for the North (with the exceptions named). During the hearing the committee voluntarily asked to change this provision to the figures named in the final code—$12 and $13—and this action received high commendation from the administrators, and also from the public at large. During the hearing it was developed that less than 3 per cent of the persons now employed in the mills are under 16 years of age, and that practically all of these would be automatically eliminated by the minimum wage provision, but the committee again voluntarily offered an amendment specifically eliminating persons under 16 from employment, and this too was received with great enthusiasm and commendation.

Section VI of the final draft of the code as submitted offers far-reaching recommendations for the administration of the Act, providing for additional reports as required for securing observance of the code; for a service bureau for aiding the smaller mills in meeting the conditions of the emergency and the requirements of the code; for registration of existing productive machinery, and certification of permit by the Administrator for installation of additional machinery except for replacement or bringing existing machinery into balance, and the granting or with-holding of such certificates.

This section also covers later provisions as to the naming and reporting of prices to avoid discrimination, eliminate unfair competitive prices, etc. And for regulating the disposal of distress merchandise, and making available to suppliers of credit essential information as to the functioning of members of the industry under the code.

It is believed that the definitions of the code, and its provisions, are made sufficiently clear in them-

At the Textile Code Hearings: At left, W. L. Allen, deputy administrator; next, Donald R. Richberg, general counsel; standing, General Hugh S. Johnson, the Federal administrator; next (seated) Tom Marchant, American Cotton Manufacturers Ass'n.; at right, standing (wearing bow tie), W. D. Anderson, who presented the southern manufacturers' brief on the code. Behind General Johnson may be seen Dr. Alexander Sachs, his statistician, and Miss Frances Perkins, Secretary of Labor. (Photo, copyright, Underwood & Underwood)

selves. Furthermore, other than official interpretation is unwise. There are provisions which permit of flexibility—the President has authority to modify or eliminate any provision not required by the Recovery Act. Supplementary provisions, such as those already announced to cover office workers, etc., are contemplated which may further effectuate the purposes and policies of the Act.

At this writing, however, it is clear that the cotton-textile industry has, through this fundamental and basic code, launched upon a program of operation of momentous effect, which will make uneradicable impression upon its immediate and long future. It must be mentioned, however, that with these drastic changes in its methods and policies, as provided in the code, there was evident during the hearings a growing solidarity among the mill executives and a spirit of co-operation never before seen. It is not felt that this was manifest under the pressure of governmental mandate; but, rather, that the mills welcome the opportunity provided by the Act, and its means of enforcement, looking to more progressive business methods, and the inclusion, in several instances, of some reforms for which the majority of the industry has long fought.

Certainly, the new order will, exclusive of the specific purposes of the Recovery Act and the cotton textile code, provide a most interesting and invaluable experience. It will prove a test of the program of partnership between government and business; and, within the industry, will demonstrate the far-reaching theories as covered in the provisions.

There is undoubtedly disagreement in some quarters concerning details of the code, based in many cases upon individual or specific cases; but from the standpoint of the industry as a whole, and for the general good of the industry in keeping with the provisions of the National Industrial Recovery Act, it is felt that George Sloan, of the Institute, Ernest N. Hood of the National Association of Cotton Manufacturers, and T. M. Marchant of the American Cotton Manufacturers Association, with the committee of 20 which they headed, have done a remarkable job in effecting the code which was finally drafted and submitted.

Because the code is so far-reaching in its effects, because it represents the best thought of the industry's appointed representatives and does present the case so comprehensively, and because its adoption basically, even with minor changes or alterations, will virtually revolutionize the economic order of the entire industry, a careful study of it is again urged. All cotton-textile mills coming under the definition are affected alike.

* * *

Other manufacturing industries coming under the textile group have all had committees working feverishly toward the effecting of codes for the different other branches. These will be presented to the Recovery administration in rapid order. Within the cotton group, plans are under way by converters, finishers, selling agents, etc., looking to the formation of other codes applying to other phases of this business.

The administrator, General Johnson, specifically and repeatedly emphasized during the cotton-textile code hearings that whatever might be settled as pertaining to the details of that code could in no way be construed as representing precedents for other industries—that each code would be considered separately and without regard to provisions made as to hours, wages, etc., in the cotton-textile code.

The personnel of the cotton-textile industry committee, sponsors of the cotton-textile code, follows:

George A. Sloan, president, The Cotton-Textile Institute, 320 Broadway, New York City; T. M. Marchant, Greenville, S. C., president of the American Cotton Manufacturers Association; Ernest N. Hood, Salem, Mass., president of the National Association of Cotton Manufacturers; William D. Anderson, Bibb Mfg. Co., Macon, Ga.; Robert Amory, Nashua Mfg. Co., Nashua, N. J.; Harry L. Bailey, Wellington, Sears Company, Boston, Mass.; B. H. Borden, American Printing Co., Fall River, Mass., and Kingsport, Tennessee; G. Edward Buxton, B. B. & R. Knight Corp., Providence, R. I., and New England Industries, Augusta, Maine; Cason J. Callaway, Callaway Mills, LaGrange, Ga.; Charles A. Cannon, Cannon Mills, Kannapolis, N. C.; Alfred E. Colby, Pacific Mills, Lawrence, Mass., Dover, N. H., Columbia and Lyman, S. C.; Donald Comer, Avondale Mills, Birmingham, Ala.; Stuart W. Cramer, Cramerton Mills, Cramerton, N. C.; B. B. Gossett, Chadwick-Hoskins Co., Charlotte, N. C.; R. E. Henry, Duneam Mills, Greenville, S. C.; Gerrish H. Milliken, Deering, Milliken & Co., New York City; Frank I. Neild, Neild Mfg. Corp., New Bedford, Mass.; Robert T. Stevens, J. P. Stevens & Co., New York City; W. J. Vereen, Moultrie Cotton Mills, Moultrie, Ga.; and Robert R. West, Riverside & Dan River Cotton Mills, Danville, Va.

President Roosevelt Signs the Cotton-Textile Code!

ON Sunday night, July 9th, President Franklin D. Roosevelt signed and approved the cotton-textile code of fair competition, in the form in which it appears on page 22 of this issue. Under its own terms, this makes the code effective for the industry on Monday, July 17th.

The president approved the original code in its entirety, with only several additions and orders. The hours of labor and minimum wages stand. He granted a three-week exemption as to limiting hours on productive machinery to mills making tire cord and fabric, and provided means for pleas from other special cases.

The code as approved remains in force four months, and is subject then to extension or modification. Other changes were: specific inclusion of office workers under minimum wage and maximum hours provision; requirement that existing amounts by which wages in higher-paid classes, up to $30.00 per week, exceed wages in the minimum groups, be maintained; time and one-half for overtime of the exceptions for which more than 40 hours per week is allowable.

Mills are required not to increase over that assigned on July 1st the size of any job without first submitting the increase to the agency created by Section 6 of the code, and receiving approval. This is to cover the matter of "stretch-outs" until the committee reports on this.

The planning committee provided for in the code is directed to submit, by January 1, a plan looking toward eventual employee home-ownership, to eliminate company-owned villages; also a schedule of wages and hours for cleaners and outside workers, now excepted in the code.

The president interprets that the minimum wage provision guarantees a minimum rate of pay per hour regardless of whether on piece or time rate.

Otherwise the provisions of the code as submitted on June 30 were accepted and approved by the President, who heartily commended the cotton-textile industry, declaring that this industry "proved itself the leader of a new thing in economics and government", which "took faith and courage and patriotism of the highest order." General Johnson and his staff also highly commended the industry.

Details of later developments in the application of the code will be reported as fully as conditions allow in the next issue.

CODE OF FAIR COMPETITION FOR THE COTTON TEXTILE INDUSTRY

Under the National Industrial Recovery Act

(In the final form in which it was submitted to the Industrial Recovery Administration at the Public Hearing June 27-30, inclusive)

To effectuate the policy of Title I of the National Industrial Recovery Act, during the period of the emergency, by reducing and relieving unemployment, improving the standards of labor, eliminating competitive practices destructive of the interests of the public, employee and employers, relieving the disastrous effects of over-capacity, and otherwise rehabilitating the cotton textile industry and by increasing the consumption of industrial and agricultural products by increasing purchasing power, and in other respects, the following provisions are established as a code of fair competition for the cotton textile industry:

1. *Definitions:* The term "cotton textile industry" as used herein is defined to mean the manufacture of cotton yarns and/or cotton woven fabrics, whether as a final process or as a part of a larger or further process. The term "employees" as used herein shall include all persons employed in the conduct of such operations. The term "productive machinery" as used herein is defined to mean spinning spindles and/or looms. The term "effective date" as used herein is defined to be July 17, 1933, or if this code shall not have been approved by the President two weeks prior thereto, then the second Monday after such approval. The term "persons" shall include natural persons, partnerships, associations and corporations.

II. On and after the effective date, the minimum wage that shall be paid by employers in the cotton textile industry to any of their employees—except learners during a six weeks' apprenticeship, cleaners and outside employees—shall be at the rate of $12 per week when employed in the southern section of the industry and at the rate of $13 per week when employed in the northern section for 40 hours of labor.

III. On and after the effective date, employers in the cotton textile industry shall not operate on a schedule of hours of labor for their employees—except repair shop crews, engineers, electricians, firemen, office and supervisory staff, shipping, watching and outside crews, and cleaners—in excess of 40 hours per week and they shall not operate productive machinery in the cotton textile industry for more than two shifts of 40 hours each per week.

IV. On and after the effective date, employers in the cotton textile industry shall not employ any minor under the age of 16 years.

V. With a view to keeping the President informed as to the observance or non-observance of this Code of Fair Competition, and as to whether the cotton textile industry is taking appropriate steps to effectuate the declared policy of the National Industrial Recovery Act, each person engaged in the cotton textile industry will furnish duly certified reports in substance as follows and in such form as may hereafter be provided:

(a) *WAGES AND HOURS OF LABOR.* Returns every four weeks showing actual hours worked by the various occupational groups of employees and minimum weekly rates of wages.

(b) *MACHINERY DATA.* In the case of mills having no looms, returns should be made every four weeks showing the number of spinning spindles in place, the number of spinning spindles actually operated each week, the number of shifts, and the total number of spindle hours each week. In the case of mills having no spinning spindles, returns every four weeks showing the number of looms in place, the number of looms actually operated each week, the number of shifts and the total number of loom hours each week. In the case of mills that have spinning spindles and looms, returns every four weeks showing the number of spinning spindles and looms in place; the number of spinning spindles and looms actually operated each week, the number of shifts and the total number of spindle hours and loom hours each week.

(c) *REPORTS OF PRODUCTION, STOCKS AND ORDERS.* Weekly returns showing Production in terms of the commonly used unit, i.e. linear yards, or pounds or pieces; stocks on hand both sold and unsold stated in the same terms and Unfilled Orders stated also in the same terms. These returns are to be confined to staple constructions and broad divisions of cotton textiles.

The Cotton-Textile Institute, Inc., 320 Broadway, New York City, is constituted the agency to collect and receive such reports.

VI. To further effectuate the policies of the Act, the Cotton Textile Industry Committee, the applicant herein, or such successor committee or committees as may hereafter be constituted by the action of the Cotton-Textile Institute, the American Cotton Manufacturers Association, and the National Association of Cotton Manufacturers, is set up to cooperate with the Administrator as a planning and fair practice agency for the cotton textile industry. Such agency may from time to time present to the Administrator recommendations based on conditions in the industry as they may develop from time to time which will tend to effectuate the operation of the provisions of this Code and the policy of the National Industrial Recovery Act, and in particular along the following lines:

1. Recommendations as to the requirement by the Administrator of such further reports from persons engaged in the cotton textile industry of statistical information and keeping of uniform accounts as may be required to secure the proper observance of the code and promote the proper balancing of production and consumption and the stabilization of the industry and employment.
2. Recommendations for the setting up of a service bureau for engineering, accounting, credit, and other purposes to aid the smaller mills in meeting the conditions of the emergency and the requirements of this Code.
3. Recommendations (1) for the requirement by the Administrator of registration by persons engaged in the cotton textile industry of their productive machinery, (2) for the requirement by the Administrator that prior to the installation of additional productive machinery by persons engaged or engaging in the cotton textile industry, except for the replacement of a similar number of existing looms or spindles or to bring the operation of existing productive machinery into balance, such persons shall secure certificates that such installation will be consistent with effectuating the policy of the National Industrial Recovery Act during the period of the emergency, and (3) for the granting or with-holding by the Administrator of such certificates if so required by him.
4. Recommendations for changes in, or exemptions from the provisions of this code as to the working hours of machinery which will tend to preserve a balance of productive activity with consumption requirements, so that the interests of the industry and the public may be properly served.
5. Recommendations for the making of requirements by the Administrator as to practices by persons engaged in the cotton textile industry as to methods and conditions of trading, the naming and reporting of prices which may be appropriate to avoid discrimination, to promote the stabilization of the industry, to prevent and eliminate unfair and destructive competitive prices and practices.
6. Recommendations for regulating the disposal of distress merchandise in a way to secure the protection of the owners and to promote sound and stable conditions in the industry.
7. Recommendations as to the making available to the suppliers of credit to those engaged in the industry of information regarding terms of, and actual functioning of any or all of the provisions of the code, the conditions of the industry and regarding the operations of any and all of the members of the industry covered by such code to the end that during the period of emergency available credit may be adapted to the needs of such industry considered as a whole and to the needs of the small as well as the large units.
8. Recommendations for dealing with any inequalities that may otherwise arise to endanger the stability of the industry and of production and employment.

Such recommendations, when approved by the Administrator, shall have the same force and effect as any other provisions of this code.

Such agency is also set up to cooperate with the Administrator in making investigations as to the functioning and observance of any of the provisions of this Code, at its own instance or on complaint by any person affected, and to report the same to the Administrator.

Such agency is also set up for the purpose of investigating and informing the Administrator on behalf of the Cotton Textile Industry as to the importation of competitive articles into the United States in substantial quantities or increasing ratio to domestic production on such terms or under such conditions as to render ineffective or seriously to endanger the maintenance of this Code and as an agency for making complaint to the President on behalf of the Cotton Textile Industry, under the provisions of the National Industrial Recovery Act, with respect thereto.

VII. Where the costs of executing contracts entered into in the Cotton Textile Industry prior to the presentation to Congress of the National Industrial Recovery Act are increased by the application of the provisions of that Act to the industry, it is equitable and promotive of the purposes of the Act that appropriate adjustments of such contracts to reflect such increased costs be arrived at by arbitral proceedings or otherwise, and the Cotton Textile Industry Committee, the applicant for this Code, is constituted an agency to assist in effecting such adjustments.

VIII. Employers in the Cotton Textile Industry shall comply with the requirements of the National Industrial Recovery Act as follows: "(1) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection; (2) that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; and (3) that employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President."

IX. This code and all the provisions thereof are expressly made subject to the right of the President, in accordance with the provisions of Clause 10 (b) of the National Industrial Recovery Act, from time to time to cancel or modify any order, approval, license, rule, or regulation, issued under Title I of said Act, and specifically to the right of the President to cancel or modify his approval of this code or any conditions imposed by him upon his approval thereof.

X. Such of the provisions of this code as are not required to be included therein by the National Industrial Recovery Act may, with the approval of the President, be modified or eliminated as changes in circumstances or experience may indicate. It is contemplated that from time to time supplementary provisions to this Code or additional codes will be submitted for the approval of the President to prevent unfair competition in price and other unfair and destructive competitive practices and to effectuate the other purposes and policies of Title I of the National Industrial Recovery Act consistent with the provisions hereof.

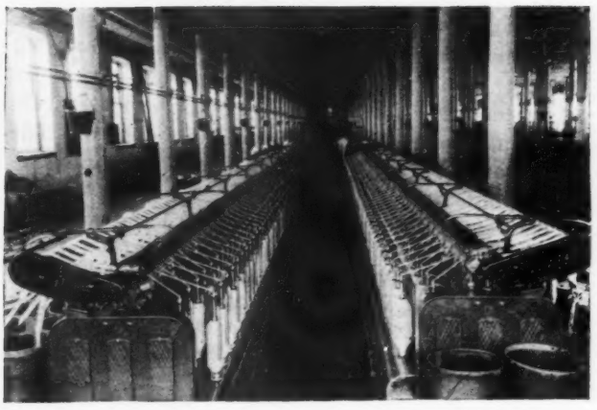
LONG DRAFT ROVING

A Pioneer Installation

By J. L. Truslow
Whitin Machine Works

THE application of long draft to roving frames was a logical development following the adoption of long draft on spinning. This article presents the figures and facts from a mill in which the entire card room was converted to long draft on roving, following the application of long draft on the spinning frames of the mill.

The Canada Mill represents the pioneer complete installation of long draft roving on this continent. The results shown are those actually secured in this plant, under its conditions. Readers will be much interested in this exclusive description of this installation.—The Editor.



Showing an alley of the new long draft roving frames at the Canada Mill . . . . . .

THE Canada Mill of Canadian Cottons, Limited, is located at Cornwall, Ontario, on the St. Lawrence River about eighty miles west of Montreal. The mill is of approximately 35,000 spindles and runs on napped goods. The yarn counts spun range from 10s to 32s warp and from 5s to 16s filling. The mill uses 1 1/16-inch cotton for warp and 15/16-inch cotton for filling.

A visitor to the plant early in 1931 would have found a well-run cotton mill, much like a hundred others. The quality of the product was excellent. The machinery was as modern as that in most American mills and was kept in good condition. The manager was W. V. Boyd, who has since become assistant general manager of all the plants of Canadian Cottons, Limited. Through his efforts, and those of Mr. Bruneau and Mr. Jackson, his superintendents, the Canada Mill has been transformed in less than two years from a good average plant into one which is unique in the cotton industry. Quality of product has been maintained, but manufacturing costs have been drastically reduced. This has been done by cutting down the number of card room processes to a degree never attempted before. This was accomplished through the installation of long draft on spinning and on all of the roving frames. The net result, in the card room, has been a reduction of 80 per cent of the number of roving spindles required and an elimination of 74.2 per cent of the operatives required in the roving department.

First, Long Draft on Spinning.

The first department in which changes were made was the spinning room. Many of the frames were of modern tape-drive wide-gauge construction. These were changed over to the Whitin-Casablancas long

A view of the long draft spinning installed prior to so equipping the card room . . .

Part of the 8x3½ roving frames abandoned upon the installation of long draft . . .

draft system. The balance of the equipment, which consisted of obsolete band-drive frames, was replaced with new machines of the latest type, also equipped with these long draft attachments.

As a result of these changes, the production of yarn per spinning spindle was increased about six per cent and the card room cost was greatly reduced by the entire elimination of the third roving process. The finer counts, which had been spun from 8x4 bobbins double in the creel, were now made from single intermediate roving on 10x5 bobbins. The coarse counts, which had been spun from intermediate roving, were now made from slubber roving in the 12x6 size. Table I shows in detail the comparison of the old and new rovings and drafts for the various warp and filling numbers spun at this plant, showing the increase in draft as a result of the installation of long draft spinning.

Table I: Showing the hank rovings used for the different yarn numbers before and after the installation of long draft on spinning, and the percentage increase in the draft secured on the spinning.

Yarn No.	Old Roving	Draft	New Roving	Draft	Increase
10s Warp	1.50 S	6.66	1.00 S	10.00	50.0%
12s Warp	1.50 S	8.00	1.00 S	12.00	50.0
18s Warp	3.25 D	11.10	1.00 S	18.00	62.2
22s Warp	4.25 D	10.35	1.50 S	14.65	41.5
27s Warp	5.00 D	10.80	1.50 S	18.00	66.4
32s Warp	5.00 D	12.80	1.50 S	21.30	66.4
5s-7s Filling	1.00 S	5.00-7.00	.50 S	10.00-14.00	100.0%
12s Filling	3.25 D	7.40	1.00 S	12.00	62.2
14s Filling	3.25 D	8.63	1.00 S	14.00	62.2
16s Filling	3.25 D	9.85	1.00 S	16.00	62.2

The running of the work at the spinning was so much improved that it became possible to assign 36 sides of 136 spindles each to one spinner and one cleaner. Formerly a spinner and cleaner ran 24 sides. Using the same cotton, the average breaking strength of the warp yarns was improved about 15 per cent.

It might seem that any mill would be satisfied with these results, but this one wished to go still further. The manager was impressed by the fact that controlled drafting at the spinning frame had enabled him to eliminate a roving process, spin from single instead of double roving, and still make better yarn. "Why not", he asked ,"apply long draft to my slubbers and eliminate the intermediates entirely, leaving only one process of roving in the card room?"

Then, Long Draft on Roving.

Unknown to the mill, the machinery builders had already made some experiments with long draft roving frames. Although this idea of spinning 32s from single slubber roving was much more daring than anything which they had tried, they were glad to co-operate in the venture.

A 10x5 intermediate at the mill was converted into a slubber by taking off the creel and putting cans behind it and the machine was also equipped with a long draft arrangement similar to that used on the spinning frames. Then followed more than a year of tests and mechanical development.

It was quickly discovered that the long draft attachments would have to be greatly modified to take care of the bulky sliver which took the place of the relatively fine roving used at the spinning frame. The top middle roll showed a tendency to slip when the frame was started, causing bad roving and

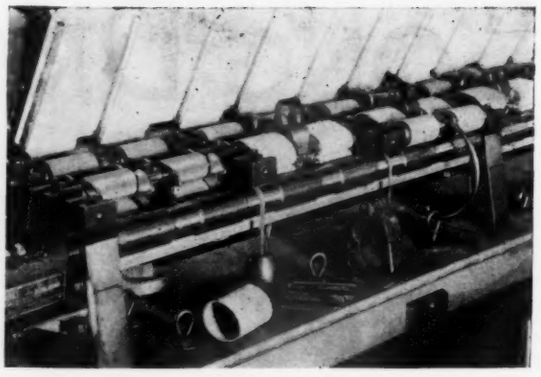
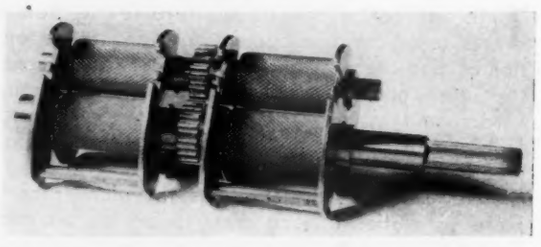


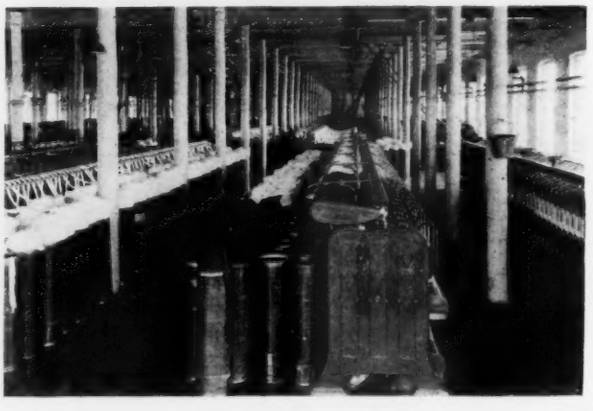
Fig. 1, above, shows the construction of the long draft as applied to roving frames. Fig. 2, below, shows the mechanical arrangement by which the top rolls are positive-gear driven . . . . . .



broken ends. This difficulty was overcome by using a positive-geared drive from the bottom to the top middle rolls. The cradle was completely re-designed to reduce the number of parts and make cleaning easier. A new back saddle was developed, which carried a sheet metal cover to completely enclose the roll-driving gears. The construction of the long draft device as thus applied to roving frames is shown in the photographs in Fig. 1 and Fig. 2 herewith.

Finally, all obstacles were overcome and it was found that a satisfactory 1.50-hank roving could be made from a 55-grain sliver with a draft of 10.

Early in 1933, it was decided to go ahead and put the whole mill onto single process long draft roving. The installation was carried out successfully and the card room has now been running on the new organization for several months. Recently it has been found practical to extend still further the slubber



Another view of the long draft roving.

The tables below will tell the story—giving comparisons of production, number of roving frames eliminated, the number of operatives required, in April 1933, after long draft was applied to spinning and roving, compared with the conditions in January, 1931 . . . . . .

Table II: Comparison of production figures at Canada Mill in January 1931 (before installation of long draft on spinning and roving machinery) and in April 1933 (after long draft was applied in both departments).

	January 1931	April 1933
Warp Spinning Spindles	21,256	21,164
Filling Spinning Spindles	14,188	13,712
Total Spinning Spindles	35,444	34,876
Pounds of Cotton through the Card Room—		
Week No. 1	46,502 (45 hr.)	33,488 (29½ hr.)
Week No. 2	49,105 (50 hr.)	34,340 (27½ hr.)
Week No. 3	52,166 (40 hr.)	39,644 (37½ hr.)
Week No. 4	45,407 (40 hr.)	47,168 (40 hr.)
Total for 4 Weeks	193,180 (175 hr.)	154,640 (134½ hr.)
Average Pounds of Cotton per 10 Hours	11,039	11,497
Pounds per Spinning Sp. per 10 Hours	.311	.329
Per Cent Increased Production per Sp.		5.8%

Table IV: Showing number of operatives required January 1931 and April 1933.

	January 1931	April 1933
Slubber tenders	4 (men)	8 (girls)
Intermediate hands	9	0
Roving Frame hands	18	0
TOTALS	31	8

Operatives Eliminated 23
% Operatives Eliminated 74.2%

Table III: Showing number of roving frames and roving spindles required January 1931 and April 1933.

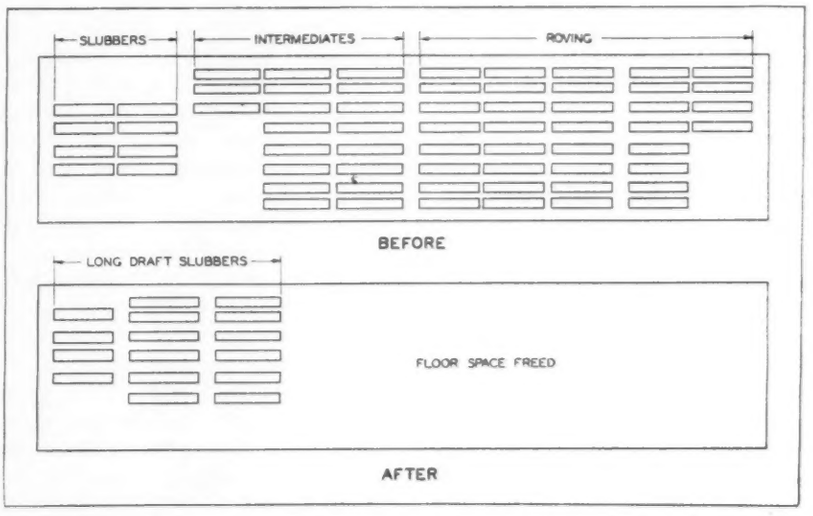
	January 1931			April 1933		
	Frames	Spindles per Frame	Total Spindles	Frames*	Spindles per Frame	Total Spindles
12" x 6" Slubbers	7	80	560	3	80	240
	1	88	88	—	—	—
	8		648	3		240
10" x 5" Intermed.	3	112	336	6	108	648
(Long draft slubbers in 1933)	4	114	456	2	102	204
	4	120	480	5	126	630
	8	126	1,008	—		—
	19		2,280	13		1,482
8" x 4" Rov. Fr.	5	148	740			
	5	152	760			
	2	140	280			
	24	156	3,744			
	36		5,524			
TOTAL	63		8,452	16		1,722

Roving Machinery Eliminated 47 Frames
Roving Spindles Eliminated 6,730 Spindles
% Roving Sp. Eliminated 80%

(*) Note: The 10x5 long draft slubbers now being run are not in every case the same machines which were running in the mill before the change, which explains the difference in the number of spindles per frame in 1933 compared with 1931.

draft, and the 1.50-hank for the 32s warp is now made from 65-grain sliver with a draft of 11.7.

The accompanying tables show in summarized form the changes which have resulted in the card room both in the number of machines and in the number of operatives required. The figures are taken from the mill records for the months of January 1931 and of April 1933. The diagrammatic sketch in Fig. 3 strikingly shows the reduction effected in the number of roving frames required and the amount of floor space released.



A sketch strikingly showing the reduction in the number of roving frames, by the installation of long draft; and the amount of floor space freed. The number of roving frames was reduced from 63 to 16.

As shown in the tables, in January 1931, before the long draft system was applied to either spinning or roving frames, the mill used eight 12x6 slubbers, 19 10x5 intermediates, and 36 8x4 roving frames or speeders—a total of 63 frames and 8,452 roving spindles in the card room—to produce roving for a spinning production of 11,039 pounds in 10 hours. In April 1933, with long draft on spinning, and single process long draft roving in the card room, only 16 frames with a total of 1,722 spindles were used in the card room to produce roving for a spinning production of 11,497 pounds. This produced a decrease of 6,730 roving spindles, or 80 per cent.

In January 1931 the mill required 4 (men) slubber tenders; 9 intermediate hands; and 18 roving frame or speeder hands—a total of 31. In April 1933, 8 girls for running the 16 single process long draft roving frames, are all that are required—making a decrease of 23 operatives, of 74.2 per cent.

The long draft slubbers can be run by girls since they are really intermediates so far as doffing is concerned. Creeling is negligible as, due to the long draft, the back roll speed is very slow. A 14-pound can of sliver will run about 18 hours.

In closing, it might be emphasized that the figures given are based upon the actual accomplishments under the conditions of lay-out, previous practice, etc., at this particular mill—the first plant on this continent to completely equip the roving frames with long draft in the manner described, and representing, therefore, the pioneer complete installation of this process.

The Value of Modernized Group Drive in the Weave Room

By Victor A. Hanson

Research Engineer, The Mechanical Power Engineering Associates . . .

THIS article was prepared to discuss the importance of modernizing group drives in the weave room, for greater economy and efficiency; it describes also a recently installed modern group drive and gives the results secured with it. The article also includes figures prepared by Mr. Hanson following extended tests and observations in a number of mills.

This discussion follows the one on "Motor Drives for Looms", in the June issue; the two articles being secured in response to requests for discussions of individual and group drive in the weave room . .

WEAVE room drive operating costs are notoriously high. In practically no industry have power losses such as those developed in the weave room been permitted to go uncorrected. Yet, in the textile industry little or no attempt has been made to eliminate this high cost.

Many group drives are improperly designed, poorly maintained, and operate at a low efficiency. Numerous applications of individual motors to looms have been made, and improvement in quantity and quality of production as a result of the application of individual motor drive has been noted in some cases, but these comparisons have been made between modern individual motor drive and old group drive.

Recent tests made in mills to determine what existing conditions are, and to find the most economical type of drive applicable to the various operations in the textile industry, which will be described later in this article, showed in one case, on a group drive of the old type, an efficiency of 70.4 per cent. However, not all group drive efficiencies are 70 per cent. They are frequently found to be 60 to 65 per cent. There is no excuse for these low group drive efficiencies, with resulting large power losses, and a study of existing conditions will reveal the principal reasons for these low efficiencies. An effort will be made here to analyze some of the findings of the tests mentioned, along this line, and to describe means of modernizing existing group drive in weave rooms to the end of greater efficiency and higher economy of operation.

The old group drives were invariably designed to fit the building rather than the machines operated. The hangers are invariably located on the beams of the ceiling with usually 10 to 12 foot centers and no consideration given to pulley locations. Thus an unnecessarily large shaft is required and even large shaft unsupported at the points of load is flexed continually while in operation, using power.

Bearings are usually of the ring or collar oiling type and very poorly maintained, with the result that if mounted overhead seconds are caused by oil drip and also power is lost. Bearings can be obtained which will not drip oil and will also have a very high efficiency with a minimum of maintenance.

Little attention is given to shaft alignment which also results in power losses, sometimes of enormous proportions.

Likewise belting is poorly selected and receives little or no attention. Worse than no attention is the use of starch, etc., on the belts. Mills frequently complain that they get a wide variation in speeds with group drive yet that variation is due solely to the mistreatment of the belting employed. One mill recently established a routine maintenance of belting, dressing belts and checking tensions regularly and eliminated the use of starch with the result that

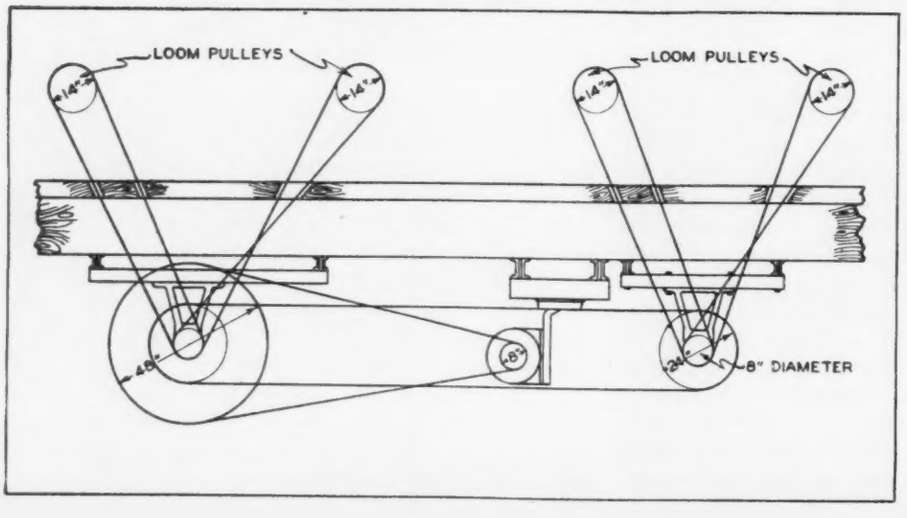


Fig. 1. A section elevation of the 52-loom modern group drive installation showing suspension of hangers from steel stringers, and method of driving the looms from below the floor . . . .

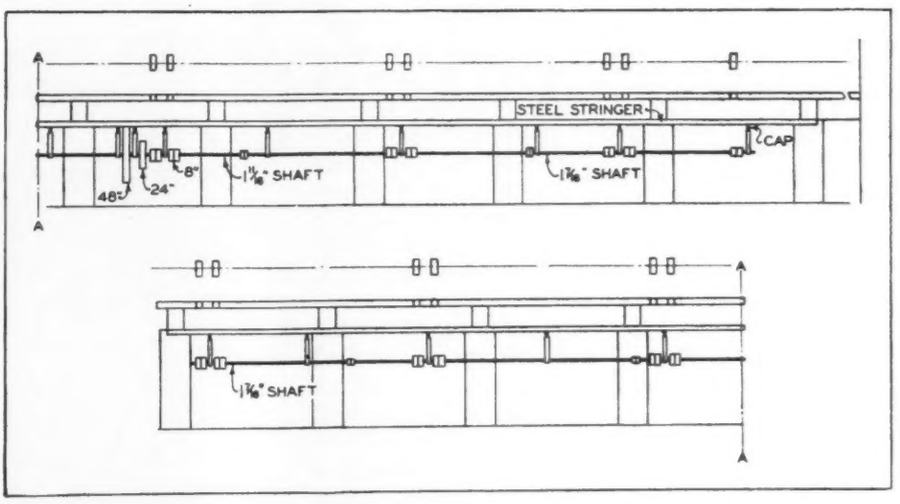


Fig. 2. A side elevation of the modern group drive, illustrating the location of hangers between the pairs of pulleys. Note location of drive pulley, in center of shaft . . . . . .

the total production of the weave room has been increased two per cent. The increase in production was achieved without one cent of additional cost in maintenance, the same men being occupied for the same amount of time as formerly, the only difference being that they are now working under routine methods and actually maintaining the belting in good condition instead of destroying its originally fine power transmitting properties.

To determine what efficiencies could be obtained with group drive properly designed, a modern group drive installation was made as shown in the accompanying diagrams, Fig. 1 and Fig. 2. It was designed to operate a group of 52 looms, and was installed in a southern mill.

In order to get support at the points of load on the shaft, steel stringers were installed, each stringer consisting of two 4-inch channels fabricated web to web as illustrated in the drawing of stringer construction, Fig. 3. These stringers were capped with the same type of channel construction and the hangers suspended from these caps, hanger and cap bolts passing through the spaces between the channels. Thus, no drilling of stringers or caps was necessary nor will drilling ever be necessary in case of relocation of hangers or shafting, this being accomplished by loosening the bolts and sliding the hangers into position.

Anti-friction bearings were used, the bearings at the pulley locations being located between the pairs of pulleys, allowing the tension on one pair of pulleys to counteract the tension of the pair of pulleys at the opposite side of the hanger. With this type of design it is possible to use 1 11/16-inch and 1 7/16-inch shaft instead of 2 7/16-inch and 2 3/16-inch commonly used, the 1 11/16-inch being ample size for any drive condition when properly supported and the 1 7/16-inch being satisfactory where the load is properly balanced on each side of the hanger. The use of this smaller shaft reduces the frictional surface speed and also the dead weight of the shaft, tending to reduce bearing losses.

As the drive is located below the floor the belt tension is counteracted by the weight of the shaft and pulleys, reducing the bearing pressure and increasing the drive efficiency. Likewise by driving from below the floor, there is no possible chance even under extremely poor maintenance conditions to get seconds from flying dirt or oil drip, although it must be remembered that an overhead drive likewise will not produce seconds if the proper type of bearings are used and bearings and belts are properly maintained. Belts in themselves are not dirty and can only throw dirt when allowed to collect it through continued lack of attention, which in itself is conducive to costly operation regardless of the type of drive employed. This is a point that is not always given due consideration.

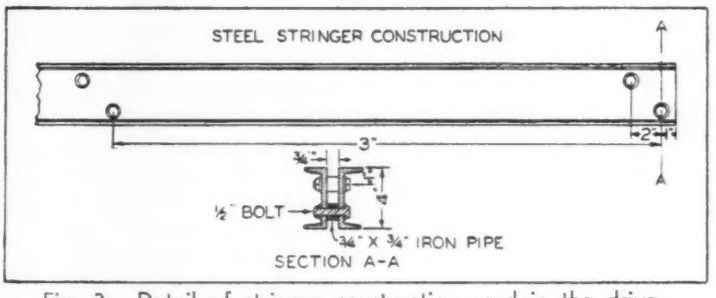


Fig. 3. Detail of stringer construction used in the drive.

Belts on this drive are 2-inch width, 18/64-inch thick, well dressed and operating at a light tension. Repeated tests show that belts operated in this manner give the desired cushioning effect found only in belt drives, yet tension may be kept extremely low.

The drive is in production operation and receives the normal maintenance given the entire weave room. The drive efficiency developed is 84.5 per cent, and as the motor efficiency is 89.5 per cent, the mechanical losses are therefore only 5 per cent.

Not only was power consumption reduced, but speeds were made uniform and production increased. Prior to the installation of the modern group drive, speeds were taken on the looms operated by the old group drive. They were typical of those found in many mills and varied from 152 to 162 picks per minute, and averaged 157.3 picks per minute. The modern group drive varied from 161 to 163 picks per minute and averaged 161.9 picks per minute.

This installation demonstrates that by the application of modern group drive, the weave room power consumption can be reduced from 15 to 24 per cent below that of the old group drive, with production quality and quantity held to the maximum capabilities of the looms; that a mill with old type drives in its weave room developing an efficiency of 65 per cent can modernize these drives and pay for this modernization in from six to seven years in power savings alone, to say nothing of the improvement in production.

The tests referred to, which were made by the writer to determine existing conditions and to find the most economical type of drive applicable to the various operations in cotton-textile mills, involved complete operating cost studies, spot tests, and experimental drive installations in mills operating a total of 348,082 spindles, and 8,707 looms, producing more than 49,661,000 pounds of fabric per year. The following paragraphs discuss some of the data developed by these studies on weave room drives and their operating costs.

The first item in operating costs is the fixed charges, such as depreciation, interest, taxes and insurance. Our figures show that, as the installation cost of individual motor or unit drive is double that of group drive, the fixed charges are consequently double. We figure these fixed charges per loom per year at least $7.80 for unit drive and $3.90 for group drive.

Maintenance varies considerably, depending on the methods employed by the mill. Our repeated studies of maintenance show that at best it is a minor item and that it costs slightly less to maintain group drive than unit drive under the same conditions to produce the same results. A minimum drive maintenance cost for unit driven looms, incllding motor, control, gear and clutch maintenance, we figure, is $1.04 per loom per year; group drive maintenance to produce the same result would be 72 cents per loom per year. Of course, both maintenance costs given should be higher to produce the best results, but they are given to indicate the cost of what is found to be common practice in the industry.

The third item in operating costs is power consumption. Comparative power consumption tests between group and unit driven looms can and have been accurately made. True comparisons are possible only when these tests are made on a number of looms actually in production under normal operating conditions in a mill and not when made on just a few looms receiving special attention for test purposes resulting in practically a laboratory test not applicable to normal mill operation.

The accompanying wattmeter charts, Fig. 4 and Fig. 5, show the power consumption of both group and unit driven looms under actual operating conditions. Both group and unit drive readings were taken in the same mill producing the same type of cloth, made from 30s warp and 40s filling. All looms are 40-inch E. Model, there being 108 looms in the unit drive test and 144 looms in the group drive tests. The unit driven looms developed an average speed of 176.61 picks per minute and the group driven looms

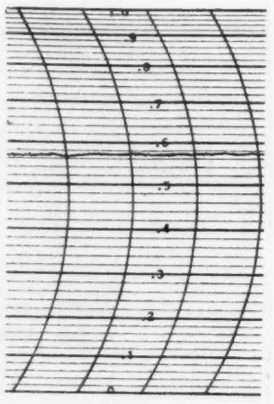


Fig. 4. — 138 Group Looms

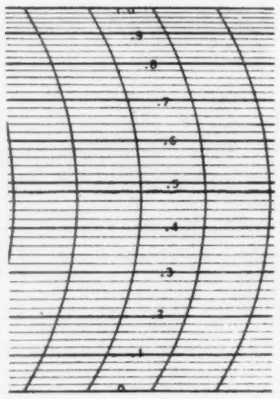


Fig. 5. — 100 Unit Looms

The above are recording wattmeter readings of the power consumed by two groups of looms of the same type and size, in the same mill, on the same type cloth. At left, Fig. 4 shows the reading on 138 group-driven looms, average speed, 176.17 picks per minute. Multiple 100. At right, Fig. 5 shows the reading on 100 unit driven looms, average speed 176.61 picks per minute, Multiple 100.

an average speed of 176.17 picks per minute.

The unit driven looms at this plant are tested for speed, and clutches adjusted, once a month, yet the variation in speed on the 108 looms was from 161 picks per minute to 183 picks per minute at this particular plant. The group driven looms, the belts on which are never dressed, had a speed variation of from 167 picks per minute to 178 picks per minute.

The power consumed by 138 group driven looms which were in operation at the time of reading was 57.3-kw, or .4152-kw per loom. The power consumed by 100 unit driven looms which were in operation at the time of reading was 48.0-kw or .48-kw per loom, a difference of 15.6 per cent.

As the group drive was of the old type a study was then made of the group driven efficiency, which was found to be 70.4 per cent, showing that the unit drive efficiency at this mill was about 61 per cent. On this basis, the mill operating 3,000 hours a year at a power cost of .01 cent per kwh, would have a basic power cost of $12.45 per loom per year on the group drive, and $14.40 per loom per year on their unit driven looms. As the group drive has a power factor of 85, there would be no power factor charge for group drive, but as the unit drive developed a power factor below 70 there would be a charge of at least .1255, raising the unit drive power cost to $18.62 per loom per year.

Thus, from the foregoing figures, the total drive operating costs per loom per year, would be:

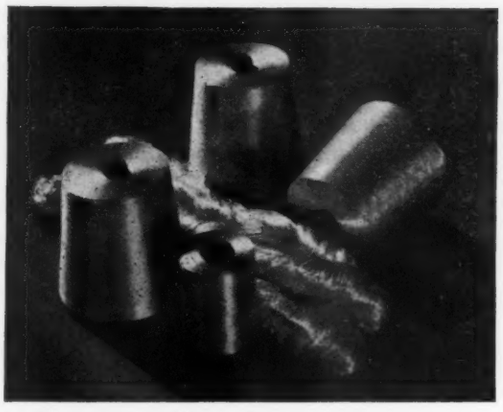
	Group Drive	*Unit Drive*
Fixed Charges	$ 3.90	$ 7.80
Maintenance	.72	1.04
Power	12.45	18.62
	$17.07	$27.46

It is hoped that this article has demonstrated not only the result of careful investigations, but the results that may be achieved in efficiency and economy through adequate modernization of group drive equipment.

Practical Rayon Handling in the WEAVING MILL

Part One

By Phil A. Ment



Photo, courtesy Industrial Rayon Corp.

THIS article is based upon practical experience in starting and operating the rayon handling department of a weaving mill. It covers in a clear manner the practical details involved in warehousing and opening, winding for warpers, twisters, and copping, warping, sizing, weaving, pretreatment of filling yarns, twisting and quilling. It may be used as an authentic guide in connection with these processes. The second part will appear in an early issue . . . .

THE purpose of these notes is to give to weaving mills, not particularly experienced in handling rayons, a few hints on procedure and practice that may prove of some aid in processing for quality. Remarks will be confined to viscose and acetate yarns only, as these are the most commonly used. The information has been collected over several years of practice, mistakes, study and observations and comparisons of the methods of others. Some of the material is elementary, but since the subject is still comparatively new, it is hoped that what is given is taken in the best of spirit.

It behooves every manufacturer to study the properties of these yarns and to familiarize himself as much as possible with the fundamental physical characteristics of each of the types. For sources of such information there are several worthwhile books available, and every rayon manufacturer is very glad to furnish data on the properties of his own product. In addition, it is very easy to compile, by a series of tests, sets of figures on the yarn strengths both wet and dry, extensibility and such other information as may be useful.

Generally, viscose yarn will lose about 60 per cent of its dry strength when wet. Acetate will lose about 40 per cent of its dry strength under a like condition. When subjected to a 30 per cent rise in relative humidity, viscose yarn will gain about 2½ times as much moisture as acetate. Such information as this is of value in regulating room conditions, for yarn strength and extensibilities bear a definite relation to the amount of moisture taken up by the yarn.

Both viscose and acetate yarns are poor electrical conductors when dry, particularly the acetate. This makes them readily susceptible to static conditions. Sometimes it is possible to overcome a troublesome static condition by increasing the surrounding relative humidity. In other cases some mechanical form of static eliminator must be employed, such as the neutralizers used on printing presses, etc.

Acetate yarns are normally softer to the feel than viscose yarns, and generally result in fabrics of superior softness. An additional soft handle can be given to viscose yarns by the application of soaps and oils. However, only oils of certain types are capable of giving like results to acetate yarns.

Viscose is re-generated cellulose, while acetate is a compound of cellulose and acetic acid. So it can readily be seen that two different sets of working conditions must be set up before satisfactory results are obtainable. The viscose yarns may be processed under the cotton system with fair success, while acetates, for best results, should be processed under the silk system.

The appearance of any artificial yarn is due to the outline of the cross-section of the individual filaments, barring, of course, defects in manufacture or other influences. Longitudinal stretch or strain will disturb this cross-section outline. But, it is readily admissible that it is impossible to subject any yarn to normal processing operations without giving the yarn *some* stretching. And right on this point hangs the keynote to successful rayon operation. Every effort should be made to give the yarn, at each stage of process, end for end, beam for beam, yard for yard on down the line, the *same* amount of *necessary* stretch. Tension is all-important. Use as little as necessary, but use it *uniformly*, above all.

Normal viscose yarn is at least 40 per cent stronger than acetate yarn, denier for denier, and this fact

should be carefully borne in mind; especially when both types are in process at the same time.

Warehousing and Opening.

Commercial viscose rayon contains about 11 per cent of moisture, and acetate rayon slightly over half as much, usually around 6.5 per cent. Every effort should be made to get these yarns to the weave room with the smallest possible deviation from these contents. For this reason it is best to store them in a dry warehouse, and to draw therefrom the cases in the order of their arrival, thereby using the oldest yarn first.

If the yarn is to be pre-treated, such as oiling, soaking, etc., the time of opening does not matter to any extent; but if it is to be wound or quilled directly from the package it is advisable to consider the room condition, a vitally important factor.

Too much stress cannot be laid upon maintaining a uniform moisture content in each and every room, but particularly in that spot where the bundles of yarn are opened and the doles shaken loose. Here, the skeins, ranging from 3,000 yards upward in length, are more exposed than at any later stage. Practically every inch is exposed to moisture change, and the hygroscopic sensitivity of the yarn is given full play. Here may be caused more troubles in the ensuing processes than can ever be accounted for.

If the mill has the good fortune to be equipped with a system of air change that maintains the moisture at a constant figure, then enough yarn may be opened and hung out to allow for the day's requirements. On the other hand, if the mill has only some general system of humidification, two or three hours run should be as much yarn as is exposed. In this latter type of room, outside conditions are very likely to play a large part, particularly in the wet seasons. A good plan, during these wet periods, is to cut on the steam heating system early in the mornings and dry out the room before the operatives come in. Frequent psychrometer readings should be taken during the day so that the work may be stopped should the room condition get beyond control. The dog-day period during the summer months is extremely troublesome; sudden damp changes coming with great frequency.

Winding.

The winding operation, wherein the yarns are drawn from the skeins to spools, will be discussed under several headings, due to the varying requirements of different mills.

First, however, the conditioned state of the yarn must be considered. If no pre-treatment has been given, such as oiling or soap soaking, then "shaking out" is much easier to accomplish.

By "shaking out", we mean the preliminary operation to putting the skein on the swift. The skein is held on the hands, with palms down, and given three or four light jerks, at the same time moving the skein around the hands. This is done in order to parallel the strands, and to locate the inside and the outside. If a skein is wrong side out, then the yarn will be loose next to the hand, and tight around the outside. Turning the skein over corrects this. During the shaking out the operator has an opportunity to hunt for broken filaments, broken lease strings, "spinner's fluff", or such apparent defects as may occur. On observing such, the operator should immediately stop winding from the defective package and turn same over to the foreman in charge. This package should be returned to the rayon company for proper investigation. The rayon producers are likely to have defective manufacture just as any other industry; and although their inspections are very rigid, some poor product does get to the mills.

If the yarn has been previously oiled or soaked in a soap or tinting bath, more care must be exercised in shaking out the skeins. Already the additional handling has given the skein an extra tangle; and if soap or some compound has been applied, small, hard, sticking places will be found. These must be very carefully jerked out, as filament rupture is very likely to occur or stretched yarn result in the winding. Breakage is also increased, resulting in more knots. Do not rub out these hard places.

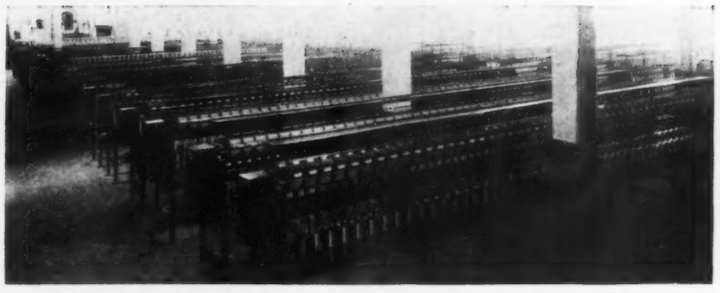
Photo, Courtesy, The Viscose Co., General Electric Vapor Lamp Company, and Sipp-Eastwood Corporation.

An installation of rayon winders at the Viscose plant in Lewistown, Pa. . . . .

Care must be taken in laying the skein around the swift. Lift, rather than pull, the strands over the ends of the pins. While swift pins should be kept perfectly smooth, constant usage will cause very small rough places and these will be sufficient to break the filaments. See that the swift bands are equi-distant from the rotating axis; thus avoiding "galloping", which has a tendency to strain the yarn. Skeins are ordinarily reeled with a cross wind and contain four tie-threads, one of which is tied to the loose end. These tie-threads should be cut, not broken, on the side away from the knot, the thread holding the loose end being cut last. It is well to pull off a few yards of yarn from the skein before piecing up, at the same time straightening the skein on the swift with the fingers.

Some rayon manufacturers offer skeins of 9,000 yards, and over, in length. These skeins are difficult to wind on the usual swift with an ordinary cotton braid swift band; as the greater centrifugal action piles the yarn up in the center of the band, and causes the band to sag and the running end of yarn to pull tight or break. A home-made spreader, of 1/16-inch

thickness fiber, will be found very helpful in handling these long skeins. In Fig. 1, a sketch of the spreader is shown. An ordinary swift band is looped through the band holes and pulled over the end of the swift pin. There is also on the market an all-metal, expanding swift of rigid construction that is very good for handling these long skeins, but the first cost is sometimes prohibitive.



Photo, courtesy Fletcher Works, Inc.

Part of an installation of 75 twisters at E. M. Holt Plaid Mills, Burlington, N. C.

Winding for Warping Creels.

Whether the warping machine is of the horizontal type, or for making section beams, the utmost care should be used in preparing the spools. The length of the set, or beam yardage, the denier of the yarn, size of spool, speed and set-up of the winder frame must

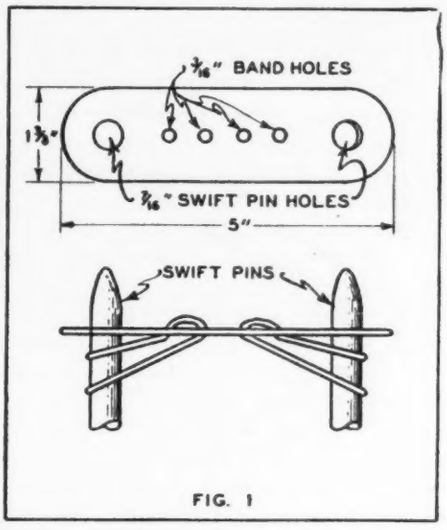


FIG. 1

be carefully considered before laying out the procedure.

Naturally enough, it is desirable to put up as many yards to the spool as possible, but it is not always practicable. Not all deniers can be run on the same size spool. The following table is a fair idea of these limits:

Yarn	Size Spools	Pounds on Spool	Yards on Spool
75/D	3¾x2¾	.40	23,500
100/D	4x3½	.80	35,500
150/D	4x4	1.00	30,000

The above spool sizes are those in most general use. Finer deniers are run on correspondingly smaller spools, while 200 denier yarns and heavier have been run successfully on 4x6-inch spools. However, the table is merely for reference, and variations are undoubtedly possible.

In setting up the winder frame, adjust the porcelain guides on the traverse bar to give an evenly divided stroke. Allow approximately ⅛-inch to 3/16-inch clearance from the inside of the spool head to take care of the whip of the yarn as the direction of stroke changes. As the differential gearing of the drive head gives a slight cross-wind to the build of the spool, this setting must be done with care, otherwise the yarn will pile up on one end, or both ends, or not completely fill the spool. Any of these defects will cause tangled spools, pulled-in ends, soft spools, and such; making waste, stretched yarn, and poor running work. Properly wound spools will be perfectly level across, with a slight indentation at the head.

As to the take-up shaft speed, figures on this are best secured from the rayon producers. However, 150 and 100 denier yarns are being successfully wound at the rate of 225 revolutions per minute. This rate and the friction weight on the swift axis are in direct relation to the density of the spool, and the amount of friction weight is best determined by trial. A good test is to take a well-built spool and press rather firmly on the ends and middle with the thumb, holding the spool in one hand. If a noticeable print is left, the density is considered good enough, and the weight correct.

Warper creel spools should be of the fiber head type, preferably with a bead on the ends of the barrel to prevent undue friction. The number of "winds" to the traverse stroke should be as many as possible to aid in giving an even pull on the yarn.

Winder frames should be kept clean, the friction wheels free from rust and gum, guard rails should be kept smooth. Porcelain thread guides held in place on the traverse rails by screws are preferable to those held by spring wires.

Operators should be carefully trained in tying and clipping knots, care in handling skeins, and in cleanliness. Knots should not be tied with the yarn under tension. Knot tails may be clipped as close as ⅛-inch if the knot is properly tied. The weaver's knot is generally best. A bag of rayon sizing starch hung on the frame will aid materially in keeping the operators' hands dry and smooth. Frequent hand-washing is advisable.

Winding for Twisting.

If the twister used is of the regular silk throwing type where the yarn is taken from a spindle bobbin through a flyer and wound to a spool, or steaming bobbin, then winding conditions must be well nigh perfect. The number of winds to the traverse stroke must be regulated to suit the running conditions of the twister frame and may vary from 15 to 25. The yarn must be firmly wound to prevent "ballooning" or sloughing off, and evenly laid to prevent the end pulling in at the spool head. Bobbins must not be filled too full. Bear in mind that on this type of machine,

the bobbin is revolving at a tremendous speed (9,000 to 11,000 r.p.m.) and consequently the greatest care and consideration must be given to proper winding.

If the twister is of the regular cotton type, where the yarn is drawn down and twisted to a regular cotton bobbin, then only the usual precautions are necessary. A firm, evenly wound spool, moderately soft, will serve well enough. The number of winds to the traverse stroke does not make any great difference.

Winding for Copping.

There is no extra precaution to be taken in this process. However, the size of the spool package must not be too large for the yarn. Generally, deniers up to 100 are run from spools of 3¼x2½-inch. Most throwsters ship yarns on this size of spool. Deniers from 100 to 200 may be run with safety from 3¾x2¾-

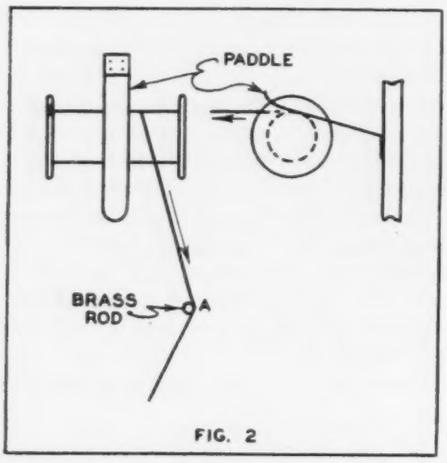


FIG. 2

inch spools, and the heavier numbers run from the 4x3½-inch spools. Ply yarns of 100 denier, 150 denier, etc., are safely copped from 4x6-inch spools.

Due to the high surface speed in unwinding, the number of winds to the traverse stroke is important. This number should be carefully regulated, and as high as practicable. This gives a more even pull on the yarn. Watch closely the lay of the yarn next to the spool head; taking care that the spool is exactly filled; otherwise, the unwinding yarn will pull in tightly, be stretched going on the cop, and show up in the cloth as a tight pick.

In closing the remarks on winding, it is deemed advisable to again stress the maintenance in the winder room of a uniform moisture condition; insofar as possible. During wet periods, where yarn in process has been left on swifts overnight, a noticeable sag may sometimes be seen in the skeins; due to absorbed moisture.

A good room condition is 60 per cent relative humidity with a dry bulb temperature near 75 degrees F. Scrubbing of floors around the winders, where yarn is in process, should be avoided. When water is sprinkled on the floor, a rise in the humidity results and this may cause stretched yarn and result in unevenness.

Swifts should be inspected at frequent intervals. Swift bands should be replaced when worn or stretched. A good plan is to notch the outside of the swift pin at points equidistant from the swift axis, and at sufficient radius to accommodate the skein. By this means swift bands are quickly and easily adjusted, and each skein fits uniformly.

Warping.

Although the up-to-date mill is generally equipped with high speed warping machines, running cones from a magazine creel, quite a number of the old fashioned cotton warpers are in use, and a few words on this method will not be out of place.

The warper creel should be set well back of the frame itself, at least three or four feet. The drum should be covered with a good smooth layer of duck or drill, even wool slasher or clearer cloth is suitable, to form a cushion as well as give a surface that will not bruise the yarn. An electric stop motion is preferable to the drop block type, the latter having a tendency to rest on and bruise the yarn. Combs should have round wire, highly polished teeth.

It is important that the spools be allowed to run as freely as possible in the creel. The skewers should be carefully selected to avoid binding, and extra porcelain or metal buttons placed on them to prevent the spool from rubbing or dragging on the edge of the creel.

On the cotton type creel, the yarn passes from the spool around the edge of the creel, and on in to the

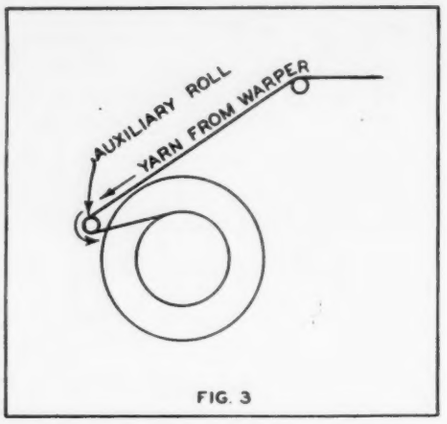


FIG. 3

comb, as shown in Fig. 2. The upright rod *A* on the creel edge is sometimes made of glass. It has been found that glass collects moisture and passes it on to the yarn. This is, of course, not desirable, and to overcome this, brass rod has been substituted for the glass.

The latest type warpers, of the cotton type, are equipped with an auxiliary roll placed over the beam as shown in Fig. 3. This roll aids in giving a better lay of the yarn on the beam.

In Fig. 2 also is shown a friction paddle resting on the running spool. Some mills prefer this arrangement instead of using a riser or sinker roll to take up the yarn slack, on the warper frame, when the frame is stopped. The paddle is a light brass or aluminum piece, highly polished, and is hinged on an upright strip back of the line of spools.

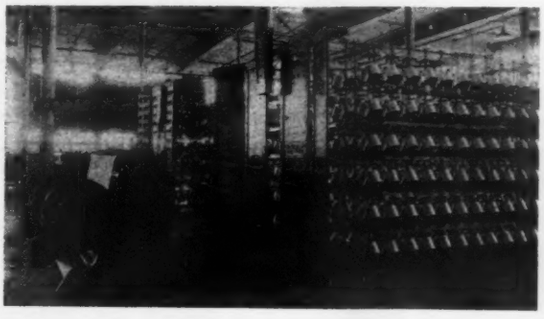
Acetate yarns are shipped nowadays principally on metal spools. These spools are small, are frequently unbalanced, and the bore is of varying size. They may give no end of trouble in the creels, and it is often

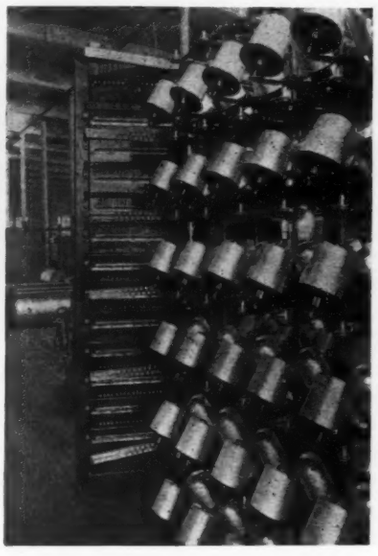
well worth the cost to re-draw the yarn to a regular warper spool.

Warper room conditions should be maintained as uniformly as possible, as in the previous stages. Acetate yarn can stand a little more humidity than viscose yarns, but it is well to limit the amount of moisture to that quantity which will neutralize the static condition. Take care that no humidifier head opens directly on the creel or on any part of the frame. Otherwise, long bright streaks are likely to appear warpways, in the finished piece, showing unduly stretched yarn. Neither should the creels or frames be set next to open windows. Sudden changes in outside conditions are dangerous.

The speed of this type of warper is a matter of opinion and practice. Some mills run 75 denier voile twist acetate and viscose yarns, 100 denier voile twist, 150 denier voile twist, and 100 to 300 denier regular warp yarns at speeds up to 25 yards per minute.

There is one disadvantage to section beam sets, made on the cotton system, that may cause trouble in the weaving. If the set of beams, which in many cases is ten or more, is pulled over the slasher and laid in the front comb as in the manner of cotton, then the result is likely to be a very haphazard distribution, due to inability to select those ends closest together for grouping in a dent.





Photos, courtesy, Cocker Machine & Foundry Co.

Above, a rayon warper; right, a close-up of a portion of the creel.

The most general method of overcoming this handicap is to hold the ends on each section beam in place with gummed paper, and lay each beam separately in a comb in back of the slasher. If each successive beam is laid in end-for-end as the preceding beam, the yarn will then be pulled on to the slasher cylinder in the most regular manner possible. After the section beams have been laid in the back comb, a dent-and-dent lease should be taken at this comb and re-laid exactly in the front slasher comb. Thus the outside ends from each beam are drawn over together, the second ends run over together, and so on. Experiments are being made in connection with the maintenance of an end-and-end lease on the cotton system, but so far the scheme has not been perfected.

In warping voile twist yarns, wherein no subsequent sizing is necessary, the direct method is quite common and very successful. The yarns are taken directly from section beams and put on the loom beam. Leases are picked on the warper frame and the ends laid in a comb exactly as on a slasher. As there are no hot cylinders to contend with, this machine may be stopped indefinitely and broken ends restored to their proper dents. Flanged head loom beams may be used, doing away with separating paper, and allowing a greater length of yarn to the beam.

High twist crepe yarns, where regular and reverse twists are to be alternated in some order, are best run on a horizontal warper. On this machine the ends are drawn from either a vertical or V-shaped movable creel, through a leasing reed, through a spacing reed, and onto a large swift. The warp is made in sections and re-wound to a loom beam. Assurance of a positive lease is necessary in laying reversely twisted yarns, and this is easily and quickly possible with the leasing reed. Care must be taken, in starting new sections on the swift, that the spacing is the same for each. The traverse table should be moved exactly the same distance as the width of the ends in the spacing reed. Too little distance results in piling the yarn, and too much gives an opening in the warp that may cause streaks.

This type of warper is also desirable for use on low twist yarns, where the end-and-end lease is desired, and the yarn subsequently sized.

In beaming yarns from the horizontal warper, the flanged head beam is not generally used, merely the barrel part, with paper inserted at intervals. If the beam is to be slashed, a light tension is best and a moderately soft beam made. For twisted yarns, the beam going direct to the loom, more tension can be applied and the beam made as hard as possible without stretching the yarn.

It is possible, if the warping operation has been carried out with care, to beam yarn from the horizontal warper on to a flanged head beam. If the beam has a readily adjustable head, such as the new threaded barrel silk beam, the operation is very simple. Otherwise, the warp must be built on the swift exactly the width of the distance between beam heads. This is rather hard to do, especially with acetate yarn, as this type of fiber—due to its behavior under an even slight static condition—has a tendency to "crawl" side wise on the swift and throw the calculated width out.

On this type of machine, acetate yarns are liable to give other troubles from static interference. While increases in relative humidity may overcome the "ballooning" of the ends, it is best to equip the frames with neutralizing equipment. Several types of these are on the market, and are very effective.

(The second and concluding section of this discussion, which is to appear in an early issue, will continue the discussion by covering Sizing, Weaving, Pre-treatment of Filling Yarns, Twisting and Quilling.)

Methods of Conditioning or Setting Twist in Yarn on Bobbins

By R. B. Smith

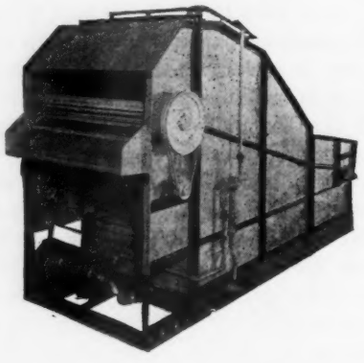
SINGLE yarn spun on quills for weaving gives more or less trouble in the loom, because kinks are formed before the warp closes together on the loose-lying filling threads. This trouble is naturally aggravated when higher twist ratios are required in many constructions of fabrics.

Many methods are employed to counteract the tendency of single yarn to kink when not under tension. Among these are: steaming the bobbins, either with or without high humidity, ageing, and spraying the yarn with cold water to which a satisfactory chemical has been added to aid the cotton in absorbing the water.

Taking up these processes as named, steaming the yarn in a closed room or in a machine has been the general practice of the past. The yarn absorbs the warm moisture of the steam and tends to relax, preventing some kinking. The machine method of doing this is carried out by dumping or placing the yarn on a conveyor apron which carries the bobbins under steam sprays and ejects them into trucks or bins ready for weaving. The machine has the advantage over the room in not holding up production and having less stock in process. The room in which the yarn is steamed is sometimes known as a conditioning room, although such rooms are often humidified without the use of direct steam. In both of these forms of application, the yarn has its regain or moisture content raised about two per cent and an improvement in the twist set. The cost of generating steam, the small amount of added moisture and the necessity of special bobbins are the disadvantages. The cost of the floor space of conditioning rooms, and the investment of stock in process are further objections when the steaming is carried out in rooms. The simplicity of this method is its chief recommendation.

In this connection it should be noted that the conditioning of yarn on bobbins may be carried out in all mills to advantage. Twist setting is not necessary in yarns that are not hard-twisted, but conditioning should be practiced on all yarns. There is a tendency of some mills to condition their yarn before winding, even though the yarn may not be woven. This conditioning strengthens the yarn and adds moisture that is lost in processing. The use of conditioning rooms by yarn mills is mostly because of the idea of adding the lost weight of the evaporated moisture. Assuming that the average moisture content of cotton delivered to the mill is eight per cent; in a mill well humidified a loss of at least two per cent of this moisture through the spinning room is common. Two per cent added to the production of any mill is certainly worth considering. A mill is mistaken which does not restore the lost moisture from the standpoint of better quality of the yarn and higher breaking strength.

The higher the moisture content of yarn, the higher the breaking strength—is a ratio that is demonstrated daily in test rooms making tests of moisture content with the breaking strength test. This usually runs seven per cent with each added one per cent of moisture. The added moisture is assumed not to exceed eight per cent total. Therefore, by adding two per cent to the mosture content of yarn shipped by yarn mills, the strength of the yarn is 15 per cent greater. If the yarn is used for mechanical purposes and the added moisture has been incorporated with a chemical that tends to hold the moisture in the yarn and prevent ready evaporation, still better conditioning exists. Moisture added by conditioning rooms is subject to the rules of the variations in the humidity to which it is exposed. If the yarn is loaded into a freight car and the temperature of the freight car is high for the period of the shipment, there will be a loss of weight in shipment. Arguments between seller and buyer often result from this evaporation. If the moisture added contained a hygroscopic agent—that is, a chemical



In this machine, the yarn is placed in the machine at a level of approximately 30 inches above the floor and is discharged from the machine directly into the trucks for delivery to the looms. The yarn is carried under a spray by a specially designed conveyor. The machine is placed on a heavy wooden platform made of cypress. A standard 1-hp. motor is used, the motor being connected directly to a centrifugal pump and the shaft extension driving the conveyor with a V-belt. The machine is equipped with a reservoir for collecting spray not absorbed by the yarn. Immediately over the reservoir is a screen for filtering the solution, and collecting the dirt and trash removed from the bobbins. The screen is removable for cleaning. The drain of this tank leads directly to the suction of the centrifugal pump, and no priming is necessary when the machine is started. The floor space required is 10x5 feet, and the height is 5½ feet.

Courtesy, Bowers & Barksdale

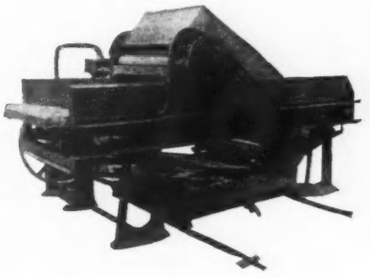
with the faculty of absorbing moisture from the air, regardless of the amount in the air or the temperature—it is apparent that the yarn would be more reluctant to give up this moisture.

To add moisture and a hygroscopic chemical to yarn requires that the solution be applied to the yarn. Many attempts have been made to put various chemicals into the water used in the humidifiers of the mill atmosphere. These experiments have been largely concerned with the hope of making the mill air free from disease germs, but some have been unsuccessfully tried with the hope of aiding the penetration and the retention of the moisture by the yarn. With the direct application of the solution in a conditioning machine, the spray not directly striking the bobbins being used over and over, it is apparent that the most ideal situation exists for applying helpful moisture and chemicals to the yarn.

Ageing filling generally applies to the simple act of delaying two or three days before weaving. It is preferable that this period of time be spent in as humid an atmosphere as possible. Yarn wound tightly on the bobbin and held in this position for a number of hours is reluctant to curl and twist. This procedure is not entirely effective and also requires much extra stock in process on quills. The advantage is that no equipment is required other than an extra supply of quills and extra trucks.

There is a relatively new method of twist setting and strengthening yarn which is gaining favor. This is the spraying or sprinkling of a solution of cold water and some chemical penetrating agent onto the yarn. The chemical used should have the faculty of breaking down or lowering the surface tension of water and aiding the water to enter the small holes of the cotton fiber. This chemical should of course not be conducive to tendering, nor should it interfere with any finishing operation. It is desirable that some mildew preventive be in the solution, although, if properly applied in the right quantity, there is not likely to be any mildewing of the yarn. The solution should be neutral or alkaline to prevent rusting the rings on the quills. Many mills have a large percentage of their quills made up with plain rings. So-called rust proof rings are galvanized. The use of stainless steel is much to be preferred and is now being offered to the trade. Many mills are using the process with old quills and having no trouble provided they use proper chemicals.

This process has the advantages that any amount of additional moisture may be added, the moisture seems to hold much longer in the yarn, there is no delay in production, and the twist is set better than by any other method.



The line of machines of which this is one model is manufactured in 19 different types for conditioning bobbins, and also for conditioning cops, tubes, spools, skeins, cones, or other packages, and is designed for using a liquid developed for lubricating the yarn, making it free from kinks, strengthening it and keeping it free from mildew. The mechanism operates on a controlled basis, which is regulated in accordance with the requirements of the yarn being treated, and also according to the atmosphere of the work room. The yarn is carried on a belt conveyor underneath the moistening apparatus, by which a high speed brush strips the conditioning liquid off of a roller partially immersed in a trough, atomizes it, and throws it onto the yarn. The speed of the roller and brush, and also of the belt conveyor carrying the yarn may be automatically and accurately regulated as desired.

Courtesy, Hygrolit, Inc.

Courses in Textiles at M. I. T.

As a result of the new activity in the textile industry, special interest is being shown in the courses for textile executives and research directors to be given this summer at the Massachusetts Institute of Technology. This work, which will be based on the most advanced knowledge in textile microscopy and technical analysis, will also include opportunities for laboratory research on special problems of the industry. The courses will be offered from July 26 to September 6, under the direction of Professor Edward R. Schwarz.

The unique optical equipment of the Institute's textile laboratory, said to be the finest available, will be employed in the course on textile microscopy. Included in this work will be the study of fibers, yarns, and fabrics, as well as the various optical instruments used for textile research. The lectures will be illustrated by lantern slides, moving pictures, and numerous experiments.

The newest apparatus and methods for physical testing of textiles will be included in the course on technical analysis. Practical research problems will be presented for solution, and typical sets of textile laboratory data discussed. Tests will be demonstrated for bursting, tearing, tensile strength, and many other properties of fabrics. Professor Schwarz will lecture on the theory of testing machine construction and operation, the graphical interpretation of data, precision of measurements, report writing, presentation of data, and the application of mathematics, as in nomographic charts, to research problems.

Students may round out these courses with laboratory experiments, for which there are unusually complete facilities at the Institute. A central station system of humidification and dehumidification is available which can be set for any desired conditions and automatically maintained constant over long periods of time. Other equipment makes it possible to raise the humidity to high levels for special work. New machines are available with capacities ranging from one ounce to 2,000 pounds, which can be operated under a wide range of speeds and adjustments.

There is also complete equipment for studying textiles in polarized light, as well as for precise cross-sectioning, micro-projection at high magnifications, and photomicrography, both stereoscopic and in natural color.

The courses may be taken separately or simultaneously. Research students may devote their time entirely to physical testing, to textile microscopy, or to both subjects.

SOFTENERS—As Applied in Finishing Cotton Piece Goods

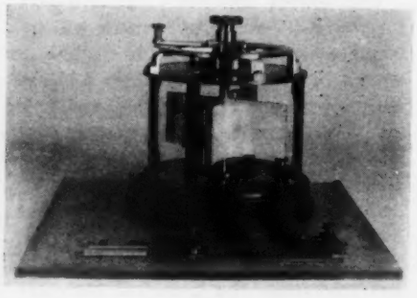
THIS is the second of a series of articles covering, in an interesting and practical way, a study of the basic materials employed in the finishing of piece goods. The first article, on Water, appeared in June. The present installment begins a discussion of softeners of all kinds. This series is especially recommended for careful study and use as reference material . . . . . .

By J. Andrew Clark

Chief Chemist, Dutchess Bleachery, Inc.

DRYING after any of the usual wet operations in a finishing plant commonly results in a cloth having a harsh, dry and brittle feel. Lubrication of the fibers with fats or oils imparts a soft and somewhat fuller "hand" to the fabric. Fats and oils are, however, seldom used pure, their application to fabrics being confined to their emulsions in water.

The feel, appearance and weight of the fabric are factors in determining the salability, and these properties, with the exception of weight, are described in vague and loosely qualitative terms only. The feel may be described as mellow, full, soft, thin, papery, hard, boardy, harsh; and for the general appearance, thin, reedy, closed-up, bulky. Terms such as high, low, surface, deep seated, stovepipe, sparkling and subdued are terms descriptive of luster. These expressions, when used by the finishers and converters in describing the finish of standard cloth constructions and finishes, are less confusing in practice than would be expected, but nevertheless, are not entirely satisfactory. It has been recognized that, after all, these properties are merely physical properties of the finished fabric and attempts have been made and are being made to define them in terms of values determined by physical measurements.



The Flexometer.

The Bureau of Standards has become interested in the measurement of the various characteristics and has developed an instrument known as a Flexometer. This instrument measures the stiffness of the fabric as well as its resilience. From a consideration of these properties and the weight, the ability of the cloth to drape can be estimated. Smoothness is also measured by determining the coefficient of friction, the indication, in general, being that in time, cloth will probably be finished to specifications based on standard methods of evaluation. While there is no immediate prospect of this happening generally, one of the large retail houses of tremendous purchasing power is seriously endeavoring to adapt such instruments and tests for their laboratory.

The Softeners Used in Finishing.

Practically, this softening or lubrication is obtained by the use of various products known to the trade as Softeners. Those softeners which depend on lubrication of the fibers are usually compounded around a base of fatty or oil products, while those depending on the swelling of the fibers or hydroscopic action contain compounds such as glycerine, and other moisture retainers; latterly, the use of the glycols has been suggested for this purpose. The softeners made from tallow, stearic acid, and the various oils are by far the most numerous and commonly used.

Source and Types of Tallow.

Tallow is the fat obtained by the extraction or rendering of the solid animal fats. Beef and mutton are the usual sources, although some horse tallow is obtainable, while tallow obtained from butchers' trimmings also finds use. This latter may be somewhat unsuited for use in textile finishing because of the presence of strong smelling chicken and pig fats.

Rendering consists generally of treating the solid animal tissues with steam under pressure which separates the fat from the water and membrane of this fatty material. The rendering tanks are usually cylindrical in shape with a conical bottom and domed top. The bottom is fitted with a draw-off valve, while the top has a loading hole with cover, as well as one or more vents. There are also several draw-off connections up the side of the cylindrical section for drawing off the melted fat. These kettles vary in size, 1500 to 3,000 gallons being commonly used and their

operation simply consists of charging with washed fat to within a foot of the top and introducing steam at approximately 40 pounds pressure at the bottom. Cooking usually requires 8 to 10 hours, at the end of which time the fat is separated. The steam is turned off and the fat allowed to settle, following which it is drawn off from the first draw-off cock, followed by a lower one as the fat level drops. The residue in the kettle is dropped through the bottom valve and is salvaged for other purposes. The material has a salve-like consistency with a pronounced grain and may range in color from white to a light yellow. The better grades of beef tallow are nearly white and odorless, while the lower grades have a strong odor.

Mutton tallow is made in the same way but has a greater tendency to turn rancid on storage. Tallow may, moreover, be bleached with fuller's earth to improve the color. The condition and source of the original fat, as well as variations in the rendering process have an important bearing on the grade of the resultant tallow, which is mainly a mixture of stearin, palmitin and olein with a small amount of free fatty acids.

The various tallows are graded according to color, acidity, and titer, the best grades being edible, white, with a low free acid content and high titer. Terms such as lily white, light cream, dark cream, clean fair tallow, etc., are used to designate the various grades. The white mutton tallows contain less than 1 per cent acid and have a titer test of 44 degrees. Light cream runs to 3 per cent acid with a titer of 42 per cent while the dark grades should not exceed 5 per cent acid with a titer of 41½ degrees. This measurement of titer or the temperature at which the melted tallow solidifies under definite conditions, is used to furnish an indication of the proportions of low and high melting fats in the tallow. The free acidity is an indication of the amount of decomposition due to rendering and any decomposition due to rancidity. Fats under certain conditions become rancid with a change to free fatty acid and decomposition of the glycerine, while other strong smelling products, such as aldehydes and ketones, may also form as secondary products. Olein, which is the liquid constituent of the tallow tending to lower the titer, is chemically the most liable to change and can even turn rancid through the action of the air under certain conditions.

The bulk of these softeners have been manufactured in the past from the light and darker grades, while occasionally, a little bone grease has been utilized. The exceptional low price of all grades for the past few years coupled with the effects of competition has caused makers, in some cases, to offer products made from edible grades. Tallow softeners are usually offered in concentrations of 15 per cent to 25 per cent fat as a cream, while a double strength product containing 40 per cent to 50 per cent fat is also offered. More highly concentrated forms of 80 per cent to 90 per cent fat have been offered from time to time, but have apparently made no great headway in that form. One type of these softeners is for the most part simply tallow saponified with caustic soda, containing the liberated glycerine, and is made up to be neutral or nearly so. Then again, this type may be modified by the addition of free fat or oil with further emulsification making a softener somewhat more suited for backfilling.

Sulphonated Tallow Products.

Sulphonated tallow products are also offered. These softeners are made with small percentages of combined sulphate and are commonly furnished neutral or nearly so, and are quite popular. Typical partial analysis of such products sold by competing manufacturers show considerable differences in composition. Such analyses are:

	No. 1	No. 2	No.3	No.4
Fat by weight ---	25%	25%	26%	27%
Combined SO_3----	.9%	.44%	1.19%	.18%
Combined Alkali-	1.0%	.62%	.38%	.34%

These values show the products as No. 1 to be highly sulphonated and almost completely saponified and neutralized, while No. 3 is also highly sulphonated but with much less combined alkali. No. 4 is, moreover, the other extreme in being only slightly sulphonated with a low alkali content.

These products, likewise, may have free tallow, stearic acid, waxes, or oil incorporated in them to make them somewhat more suited for backfilling or other specified finishes.

Stearic acid is another of the primary fatty softeners and is prepared generally by two different methods, one of which yields a product called saponification stearin, while the other is known as distillation stearin. Saponification stearin is usually prepared by the action of 1-3 per cent of calcium, magnesium or zinc oxide on tallow or similar fats in autoclaves at eight to ten atmosphere steam pressure, the products being the metallic soaps of the fatty acid, free fatty acids and glycerine. After treating the mixture with sufficient sulphuric acid to decompose the metallic soaps, the fatty acids prepared by this method are sufficiently pure that by pressing at low temperatures, a pure white crystalline material is obtained which contains mainly stearic acid, palmitic acid and only a small trace of the liquid oleic acid. This pressing is usually conducted by running the melted fatty acids into shallow pans and allowing them to stand several days at a temperature of about 30 degrees C. to crystallize the stearic and palmitic acids. This is first pressed cold, then at 40 degrees C. The liquid oleic acid, separated, is known as red oil or olein and is widely used in the textile industry.

Distillation stearin is made by several similar processes, all of which depend on splitting the glyceride with sulphuric acid or catalysts such as the Twitchell reagent, which is a reaction product of an excess of sulphuric acid on oleic acid dissolved in aromatic hydrocarbons. The liberated fatty acids are chilled and pressed in the same manner as the saponification product but are somewhat discolored and are usually purified by distillation with superheated steam. The chemical action between sulphuric acid and oleic acid is quite complex and as a result other products such as iso-oleic are also

present. These secondary products have a tendency to lower the melting point slightly below that for distillation stearin.

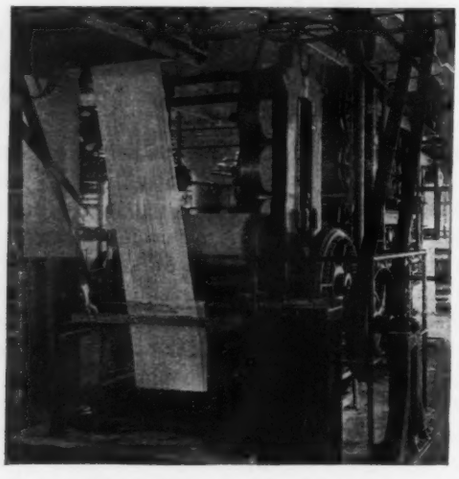
The following table shows variations in various grades of stearic acid:

Grade	Melting Point	Iodine Value	Acid Value	Saponification Value
Rubber stock	125.6° F.	14.90	206.0	206.0
Single Pressed	127. ° F.	9.65	212.5	212.5
Double Pressed	129. ° F.	5.39	209.0	209.0
Triple Pressed	130° F.	3.51	208.9	208.9

This material is usually sold in cakes or flaked form and shows a highly crystalline structure on fracture. While the triple pressed is pure white and has a dry, greasy feel, the lower grades may show a yellow tint on the interior of the cake. The powdered product is liable to undergo oxidation due to the pressure of small amounts of residual olein, and consequently, some concerns do not sell stearic acid in this form.

Stearic Acid Softeners.

The stearic acid softeners are simply emulsions of stearic acid formed with ammonia, borax, or other alkalies. Paraffin, tallow, and oils are, however,



Photos, Courtesy H. W. Butterworth & Sons Co.
Mangle Used in Processing.

added occasionally to modify the effect of the stearic acid. These products are generally characterized by a white silvery fish scale appearance, ordinarily sold in concentrations of 15 per cent to 20 per cent fat content and are commonly called luster finishes. When used with starch, they have a filling and slight softening effect while on calendering, the stearic acid develops a pronounced luster. Used alone, these products have a filling and stiffening action. The addition of paraffin in small amounts has a tendency to reduce the papery hand when this product is used alone and helps to increase the body without noticeably diminishing the luster on calendering. Softeners of this type are not commonly used for backfilling, while those made with borax seem to be most suitable for colored work.

A very successful softener, containing paraffin and sold widely, contains 15 per cent stearic acid, 5 per cent paraffin and is emulsified with approximately 1 per cent ammonia.

These products are easily made by simply melting the stearic acid and paraffin together with sufficient water in a kettle equipped with steam coil and agitator, running in the ammonia or alkali solution while the agitator is in motion and agitating for 15 to 30 minutes. After standing an hour or so, the product is drawn off into barrels. The characteristic luster only develops on slow cooling in the barrel and is rather difficult to obtain with laboratory mixes.

Formulas for Broadcloth and Dress Goods.

The following three formulas for broadcloth will give some idea of the quantities used.

No. 1. 124x66—2 Ply Mercerized Shrunk Broadcloth.
5 lb. Tallow Softener
2½ oz. Indanthrene Blue
Made up to 40 gals.

No. 2. 124x66—Single Yarn Broadcloth.
30 lb. Tallow Softener
3 oz. Indanthrene Blue
Made up to 40 gals.

No. 3. 128x68—Mercerized Shrunk Broadcloth.
30 lb. Stearic Acid Softener
3 oz. Indanthrene Blue
Made up to 40 gals.

The two following are examples of some used for dress goods.

No. 1 2.85 yard—48x48 Dyed Suiting
100 lb. Glucose
50 lb. Stearic Acid Softener
10 lb. Tallow Softener
Made up to 140 gals.

No. 2. 4.00 yard—48x48 Dyed Suiting
25 lb. Corn Starch
25 lb. Potato Starch
25 lb. Tapioca Starch
40 lb. Tallow Softener
Made up to 140 gals.

These two examples are offered as some actually used but nevertheless are open to criticism. In the first, the use of glucose with dyed goods is dangerous because of its reducing action during finishing and storage and should be prohibited. It is rather doubtful, in the second example, if the desired finish could not be obtained with a smaller number of starches equally well.

In general then those softeners that are soap-like and contain no free fat or oil have softening and body-building characteristics but break down on the addition of free acid and metallic salts. If, however, free fat or oil is present in the softener, it then becomes especially suited for backfilling and will tolerate liberal quantities of metallic salts such as zinc, calcium or magnesium, since enough free fat is left in the mix, even though the metallic salts destroy their equivalent of the soap constituent. Care must, however, be exercised to avoid excess of these softeners or a greasy feel may be obtained. The use of sulphonated oils in mixes of this type is troublesome in that an excess may cause foaming. This leads to bubbles catching on the doctor blade with a resultant bare spot on the cloth.

The cutting-up trade frequently experiences trouble from their knives and needles heating up with various fabrics. This is especially prominent with backfilled cloth and is commonly blamed to the

quality of the talc used. That this is merely a matter of lubrication or lack of it, which may, of course, be aggravated by the presence of fillers, was recently shown by a complaint of this nature concerning goods that actually had received a water finish, while a competitor's cloth was entirely satisfactory in this respect. Analysis showed the latter to contain approximately 1 per cent of tallow only.

Stearic acid softeners also have a tendency to make cloth water repellent and this material should not, therefore, be substituted for tallow softeners without making allowances for this effect. An example of this comes to mind as a recent case in which such a softener was substituted in finishing 100,000 yards intended for further processing by the customer. After delivery, it was found unable to process a yard, necessitating retreatment and shipping allowances.

The Oil Type Softeners—Mineral Oils.

Oil type softeners are quite numerous and while a great variety of oils are used, they can be classified in the regular academic divisions of mineral and fatty types.

Mineral oil, the first of these, is obtained from petroleum. Owing to the recent intensive research and development that the industry has undertaken to improve the quality and learn the chemistry of the mineral oils, a brief resume of its refining is included.

Petroleum, the main source of various grades of mineral oil and its products, occurs widely according to its origin, and since the United States is the largest producer, only the domestic oils will be considered. The crude product is essentially a mixture of complex compounds of carbon and hydrogen, with which are found small amounts of sulphur, nitrogen and oxygen compounds. There are, in general, two main as well as several intermediate types of petroleum occurring in America; a paraffin type occurring in the Pennsylvania districts, while the California oils are characteristic of the asphaltic type. The former is a light yellow to brown color and is characterized by the presence of 3 to 8 per cent paraffin, with only a small amount of naphthenes and practically no asphalt. They are, moreover, high in naphtha and lubricating oils. The California oils are characterized by the presence of asphalt and various nitrogen bases with the almost complete absence of solid paraffins.

The Refining Process.

The crude petroleum is first separated into various products by fractional distillation in huge horizontal steel stills. The methods of distillation determine the nature of the products to a great extent in that when the high temperatures are reached as in ordinary distillation, some partial decomposition or "cracking" of the heavier portions takes place, with the formation of oils of lower gravity. The ever-increasing demand of the automotive industry for oils of higher quality has caused the development of other processes to prevent this cracking. The "partial pressure" principle of distillation was employed by injecting dry steam into the still, which permits the oil to distill over at a lower temperature than its normal boiling point, and is known as steam distillation. Somewhat better results can be obtained by applying a vacuum at the same time, which allows of even lower temperatures.

The various fractions obtained in the distillation, such as light and heavy naphtha and kerosenes are of only little interest in textile finishing and will not be considered here. The tar fraction, however, is the source of the various oils and paraffins and a general description of its refining is as follows:

The dark colored portion of the distillate obtained with a gravity of 21 degrees to 22 degrees Be. is known as tar and the older method of refining is to destructively distill until it cokes in the still. This tar distillate then contains the lubricating oils and paraffins and is yellow in color. This material is agitated in steam heated vessels with concentrated sulphuric acid after which the acid is drawn off, the oil washed with water, after which the acid residue is neutralized with caustic soda and followed by washing.

The oil, after cooling to room temperature, is run through a filter press which roughly separates the oil from the paraffin. The oil fraction is then distilled further with steam to remove the lighter fractions while the lubricating oils are separated as light or medium, while the residue in the still is cooled and used for heavy oil. These oils are again treated with acids and caustic and after thorough washing are heated and finally dried by blowing warm air through them. Improved quality with lower color can be obtained by vacuum distillation and also filtering through fuller's earth, which removes most of the asphalt.

The Edeleanu process of refining oils by the use of liquid sulphur dioxide is an example of one of the more modern methods of refinishing lubricating oils to obtain higher quality. This method, in general, consists of treating the lubricating distillate with liquid sulphur dioxide, which having a selective solvent action for those constituents which cause oxidation and decomposition in use, leaves the paraffines and naphthenes, while removing sulphur, aromatics and olefines.

Petroleum usually contains some of the following constituents:

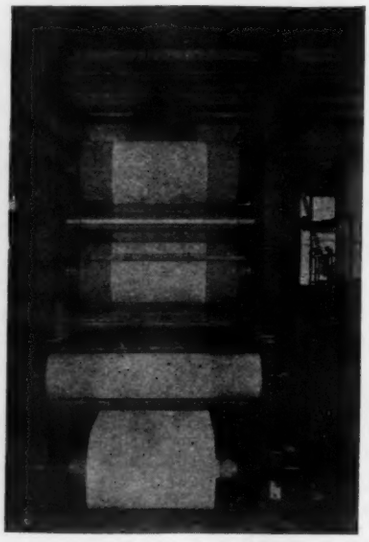
Saturated Hydrocarbons
Unsaturated Hydrocarbons
Cyclic Hydrocarbons
Unsaturated cyclic Hydrocarbons
Aromatic Hydrocarbons
Pryidine bases
Resins
Asphalt
Sulphur Derivatives

While this is a formidable list of compounds, the well refined lubricating oils will contain mainly saturated and cyclic hydrocarbons, the other constituents having been removed in the refining to a great extent. The saturated hydro-carbons are members of the methane series, while the naphthenes are included in the cyclic hydrocarbons. The members of the first series are not acted upon by concentrated

sulphuric acid to any extent while the naphthenes only react very slowly with this reagent.

Ordinary lubricating oils owe their color to the presence of resinous and asphaltic bodies containing oxygen and sulphur. These can, however, be removed by filtration through fuller's earth with the production of a colorless oil.

Investigation into the relationship between oil and asphalt has shown that under suitable conditions oxidation causes an increase in asphaltic and resinous products in the oil, which, moreover, can occur in storage. In relation to the finishing of cotton with mineral oil, and the same remarks apply to mineral oil in general, it would seem that the formation of a yellow color or stain may have been due in part to the use of impure oils, containing resins or asphalt, the contents of which would have been increased by partial oxidation in finishing and storage. The tremendous area of the cotton fibers naturally distributes the oil in an infinitely thin film which facilitates this reaction.



A Five-Roll Calender.

In the preparation of white paraffin oils, dark colored, water-soluble sulpho-acids are obtained. Small quantities of the ammonium salts of these acids can be used to make mineral oil emulsions, which show considerable resistance to decomposition with heat or acids. From time to time, such mixtures have been offered to the textile trade but have not received any great usage as finishing oils.

While mineral oils will lubricate cotton fibers, they cannot be added directly to the starch mix or finishing bath for this purpose, without danger of causing spots, through separation of the oil. This material must be emulsified with an agent to form a stable emulsion at the temperature of the bath. The methods of emulsifying are many but depend generally on the presence of a soap and fatty acid in small amounts. In this class, is included various mixtures with tallow softeners, soap, sulphonated fatty oils, triethanolamine and other complex organic emulsifiers.

Mineral oil sulphonates can also be used to emulsify mineral oils. These sulphonates are manufactured from the refined oils and should not be confused with the cheaper sulpho-by-products of petroleum refining.

In mixtures requiring relatively small amounts of mineral oil, tallow softeners answer satisfactorily as a vehicle for emulsifying it in the finishing bath. Ten pounds of a 25 per cent softener will emulsify up to one pound of oil which should be mixed with the softener and thoroughly stirred before dilution. Failure to do this results in an incomplete emulsification with oil spots on the surface of the liquid. These emulsions are stable enough for use in finishing, especially if starch is used in conjunction with them and can be mixed at low cost as required for use.

Combination Fatty and Mineral Oils.

Various combinations of sulphonated fatty and mineral oils are offered, especially for finishing broadcloth and rayons. This gives the cloth a "satin finish" with high luster. The sale of these products is being retarded somewhat by prejudice against the use of an oil which does not saponify, the idea being, of course, that the mineral oil cannot, therefore, be removed by scouring if re-processing becomes necessary. This does not, however, seem to correspond with the generally accepted theory of oil removal, which is effected more by emulsification than by saponification.

Harte, *Ind. & Eng. Chem.* Vol. 4, Jan. 1932, discusses the emulsive capacity of sulphonated oils and shows that those made from olive oil are superior to the castor products for emulsifying mineral oil. Examples given show good emulsions with a mixture of 60 per cent mineral oil with 40 per cent of a 75 per cent sulphonated olive oil. The proportion of mineral oil can be somewhat increased by a small addition of oleic acid. These emulsions are stable and give stable white dilutions with water.

In preparing emulsions of mineral oils with triethanolamine or others of the numerous complex organic emulsifiers, higher concentrations of mineral oil can be employed than when using sulphonated oil for this purpose. Such a preparation can be made to contain approximately 86 per cent mineral oil, 10 per cent oleic acid and 4 per cent triethanolamine. The latter two products reacting to form a soap soluble in the mineral oil with a clear solution. When this is diluted with water, a stable emulsion is formed.

Paraffin.

Paraffin like the mineral oils can be emulsified and is offered to finishers as soluble wax under various names. One such product is sold as a solubilized paraffin with claims that it will mix readily with starches and gums, forms permanent mixtures which do not separate on cooling, after which the bath can be re-heated and if necessary, can be removed from the goods with scouring.

Stearic acid mixtures with paraffin emulsified with small amounts of ammonia or other alkalies are commonly used, the paraffin content of which in some cases may be relatively high in proportion to the stearic acid. Other emulsifiers such as sulphonated oils, triethanolamine, etc., are also used. An example of one such is one with the approximate composition: Paraffin, 30 %; Stearic Acid, 13 %; Sulphonated oil (75%), 10%; water, 47%.

This product is a rather stiff white paste and can be used alone or in mixtures with starches or other softeners. Products of this type not only find use as softeners but are also used in waterproofing mixtures, either alone or in emulsions with aluminum stearate. Prepared mixtures of these products can be diluted and then padded on the goods with an excellent shower proofing resulting on drying. Starch and gums can also be incorporated in these mixes, though in this case, more of the waterproofing finish must be used.

The Soap Softeners.

Soaps made from several of the fats and oils make excellent softeners when used either alone or with added fats, and in many cases, may be more economical than the sulphonated tallow or oil types. Generally speaking, soaps are the alkali salts of fatty acids and are obtained by the reaction of caustic or alkali carbonates on fats or oils with the liberation of glycerine. The soda and potassium soaps are the more common, while ammonia soaps are occasionally offered for special uses. The soaps vary in physical and chemical properties depending on the nature of the alkali as well as that of the fats from which the soap was obtained. They will, however, all react with solutions of the alkali earth or heavy metals to form insoluble, gummy products. This reaction caused by the presence of calcium, magnesium iron or manganese in hard water is the reason for the commonly occurring scum. The gardinols and other relatively new compounds of this class which have recently been introduced are a decided help in reducing and eliminating this effect when used with soap.

Soap manufactured for the textile industry is made principally by the boiled process, which consists of boiling the soap stock with caustic soda solution in an iron kettle. The melted fat is run into the kettle along with a stream of dilute caustic. The strength of the caustic, however, varies with the fat used, since tallow and palm oil saponify readily with caustic of 12 to 18 degrees Be' while cocoanut oil requires caustic of higher concentration. Soon after the reaction starts, heat is liberated and the saponification proceeds of its own accord. This may be entirely too rapid in the case of cocoanut oil, this reaction sometimes being retarded by the addition of salt or by partial saponification in steps. The boiled soap is separated from the spent lye and glycerine by salting out or "graining". Brine or solid salt is added until tests show a separation of the curdy soap from the lye. The lye is drawn off after settling and the crude soap reboiled with more caustic until a slight excess is maintained. Water is added to the soap following which it is "grained" again. Four or five grainings may take place, after which the soap is allowed to settle for about a week. Two layers are formed at the end of this time, the top being good soap with about 32 per cent water, while the bottom is an impure product called "nigre". The upper layer is drawn off and mixed in a crutcher and poured into frames to cool. These frames are large iron boxes with detachable sides, that are removed when the soap has cooled. The soap is then cut into bars on a slabbing machine by passing it across wires, after which the bars are dried sufficiently to form a thin crust of relatively hard, dry soap on the surface which protects them well enough for shipment. This soap is usually sold on a 70 per cent soap basis. Occasionally, the bars are sliced in a chipping machine and reach the market in various sized flakes or even in relatively thick slices containing about 18 per cent moisture. Fine chips or flakes are made continuously by flowing a film of the hot soap from the boiling kettle over water-cooled horizontal rolls from which it is scraped as thin flakes to fall on conveyors which pass through drying and cooling compartments and finally discharge the soap in a few minutes with but 10 per cent to fifteen per cent moisture.

Tallow, bleached palm, cocoanut and olive oil soaps are available as stock for finishing softeners and while used alone, have a stiffening as well as body giving properties. They do, however, have a softening action when used with starch. This type of softener is used mainly for pure starching, and is limited to use in neutral or alkaline mixes, while metallic salts such as zinc, magnesium or calcium must not be present. These metals would, of course, precipitate the insoluble metallic soaps as spots on the goods.

Potash soaps made from the same fats are more soluble and softer than the corresponding soda soap. Price considerations, as well as a tendency for the former to give tacky films on absorption of moisture from the air generally prevents its use as a finishing compound. Sodium oleate has a high solubility, however, and a 25 to 30 per cent solution remains liquid at room temperature, while the soda soap of cocoanut oil is a solid at this concentration. Stock solutions of 20 to 28 per cent of soaps, with or without the addition of oils, may be made by dissolving the solid material with the requisite amount of hot water, which will permit the incorporation of oils if desired. Many plants, however, make their own soap softeners by boiling tallow, stearic acid, bleached palm or cocoanut oils with alkali. One such formula for a cocoanut oil softener of this type is

Cocoanut oil	2060 lb.
Soda Ash	135 lb.
Caustic @ 39 degrees Be'	1095 lb.
Water to make	9000 lb.

This mix is heated until it begins to thicken, the steam being then turned off. Cold water is run in rapidly to prevent boiling over in the kettle. When half the required water is added, it may be boiled. After testing with phenolpthalein, a light pink should be observed; if not, more caustic is added. The soda ash is then added while boiling, after which the balance of the water is added with agitation. The finished batch is then run off into barrels.

The amounts of the various finishing materials used to obtain definite effects depend to such a great extent upon the finishers' skill and equipment that the formulae given as examples can only be considered as starting points to develop finishes with any

given set of equipment.

The following is a general description of the difference in operation between pure starching and back filling.

Pure Starching and Backfilling.

Pure starching consists of passing the goods through the nip of a starch mangle. Light weight goods may pass directly through while heavier grades are usually submerged under a roll in the starch mix to impregnate both sides of the cloth before passing through the nip. The starch mangle usually contains a rock maple roll on top, with a brass lower roll or the combination may also consist of a rubber and brass roll. These mangles are commonly run in range with dry cans for half-drying, and a hot tenter for bringing the goods to width while completely drying. Organdies and other such fabrics are run on frames equipped with a swinging motion which keeps the individual warp and filling yarns from being cemented together by the starch while drying. Light and medium mixes are ordinarily used in this type of machine for if heavy mixes are employed, slipping of the top bowl may occur unless this is geared to the driving member.

In backfilling, the cloth is only coated on the back with the starch mix which is applied by passing the cloth face in, around a large wooden roll, submerged in a rather large box containing the starch mix. An adjustable doctor blade squeezes the paste in and wipes off the surplus as the cloth passes through, after which the cloth is dried face down on cans. When the mix is too thin, the paste is forced through the cloth to the face which causes a mottled, chalky look. With most goods, moreover, the backfilling mix should be tinted to match the face color, and in whites the cloth is commonly tinted or blued before backfilling, otherwise, the face would appear as a creamy white while the back would carry all the bluing to give a pronounced two-sided effect.

Lint and other solid obstructions must be prevented from collecting under the doctor blade as streaks are produced through the absence of starch while any water drops or unevenness in moisture content will show in the finished goods as thin places. When the cloth is run too narrow in relation to its finished width through the backfiller and is afterwards pulled to width, the backfilling may be damaged at the selvages to give pin holes. The mixes used in backfilling, moreover, are rather heavy and generally contain large amounts of starch and mineral matter as well as softeners, while the mixes used in pure starching ordinarily are much lighter.

Careless boiling of the mix containing either soap or tallow softeners may permit small lumps of these materials to be distributed throughout the paste, causing soap or grease spots on the goods after processing. This has been one of the weaker objections to the use of the more solid 50 per cent sulphonated tallows, although the remedy is obvious. This trouble is not to be confused, however, with "separation" of the fat which occurs while the mix is being used. Separation is usually caused either by the instability of the emulsion, and is dependent on the amount and ratio of the free fats and softeners, as well as the alkali present, or may be caused by the cloth carrying sufficient acid residue from the final white washings from the bleach house, to gradually upset the alkali balance of the mix with the resultant decomposition of some softener. It is generally considered that .6 per cent sodium oxide content is required of a sulphonated tallow to form emulsions with water without splitting out free fat, whereas more alkali is required with soap.

(In the next article, the discussion of Softeners will be continued, covering castor, olive, and cocoanut, glycerine, glucose, metallic salts, glycol, etc. The first article in this series, which appeared in the June issue, covered water; clippings of it will be furnished upon request.—The Editor.)

Cotton Fabrics Membrane in Road Construction.

Successful use of cotton fabric membrane in the construction of secondary roads in America has prompted foreign engineers to test further the application of this form of construction to European highways. The Cotton-Textile Institute is advised that three experimental strips employing the cotton fabric membrane are being now constructed in Holland.

In one case the fabric, with asphaltic treatment, will be applied directly to the surface of a gravel road. The second test strip will involve the application of asphalt-impregnated fabric to a road which has had several treatments with bituminous surfacing. In the third instance, the membrane will be applied over a worn brick road.

It has been demonstrated in the United States that cotton fabric membrane laid over a prime coat of tar and given a top surface treatment of hot asphaltic oil and sand produces a very smooth road surface which resists fracture and reduces upkeep costs. The membrane acts as a waterproof blanket under the road surface, eliminating the usual deterioration due to penetration of water. Experimental strips thus constructed in several states have remained in excellent condition, without repair, under heavy traffic conditions for several years. Recently a two and a half mile stretch of the so-called "cotton road" was built as part of a main highway near Baton Rouge, La.

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Increase in Cotton Toweling Noted.

Upwards of 10,000,000 yards of cotton toweling have been required to take care of new business developed in the towel supply field during the past year, according to figures obtained by the Cotton-Textile Institute. This toweling is used in cabinet installations placed in some eighty groups of establishments including theaters, bakeries, food and candy factories, clubs, restaurants, banks, railroad terminals, hotels, department stores and various other large plants and office buildings.

Cotton towels have supplanted substitutes in these establishments because of demonstrated economy and greater service efficiency. J. H. Mayer, one of the outstanding personalities in the towel supply business who is supervising an extensive educational program, estimates that $1,250,000 new business for the towel supply industry has been gained in the above groups. There has lately been perfected a cabinet with a timing device which prevents wasteful use of wiping facilities. This contributes to the economy which makes cotton towels cost no more than substitute service and has proved to be an important factor in the marked increase of preference for cotton towels.

CURRENT TEXTILE TOPICS. . . .

Talk of the Month

WHEN in the middle of June the New York Cotton Exchange Service reported that the cotton mill activity of the United States was the highest for many years and compared well with the all-time record of later in the winter of 1926-1927, it recorded a high point of a transitional period for the industry. The business was between the depths of one emergency situation and the start of a stated future "emergency" period whose character is yet to be determined. The transitional months on their part have afforded the industry a welcome relief from dark despair of many years. Now it is up to the administrative officials to determine what the coming two years will bring forth.

The General Situation in Textile Markets

There was a crisis for the country the first of March and the new Administration "carried through". Another crisis developed as Congress approached the day it was supposed to end its sessions, in the upsetting of the program regarding anti-trust provisions of the industrial recovery bill and moves which threatened to give labor dictatorial powers under the new dispensation. Thus it was that Southeastern Cottons, Inc., was moved to say in its weekly letter:

"Employers have been asked to put their trust in the President and in those who will administer the regulations under this (the Industrial Recovery) act, but labor has placed confidence only in the written word of the bill itself. Industry may now very wisely examine the price which it is expected by Congress to pay for the advantages and privileges this act has been understood to extend to business as government's partner . . . More and more is it now clear that it will be in the wisdom and the understanding of the execution of this act that the success or failure of the Administrations' program for recovery will depend."

It appeared that the program might be seriously hampered at this critical juncture, because some powerful factors in industry were so wrought up as to threaten closing their plants for the term of emergency control. The hope was expressed, however, that the labor provisions could be administered in a way to conserve the benefits of the program indiscriminately.

Mid-June brought evidences of a rather surprising, but encouraging tendency for retailers to anticipate a broad movement in the fall. There was a manifestation also of consumer "buying mindedness" in response to the still prevalent low basis of prices and the prospect of facing higher levels later. This buying was a confirmation of the wisdom of the heavy buying of jobbers and wholesalers in the primary markets through the spring months.

Years of short buying created serious deficiencies in distributors' inventories and in consumers' ordinary supplies of everything. True there were false starts toward recovery on the basis that liquidation had been carried to extremes at which enforced buying would ensue. It now appears that buyers will not be forced. The extent to which consumption may lag has had a convincing, if sad, demonstration. But the spring and early summer have also demonstrated that, when the psychology of the public has been changed, the tendency to fill up the vacuum is just as sure as the fact that people can get along without buying for an unconscionably long time. Nature still abhors the vacuum.

Conservative sellers have accepted the upward swing of buying and of prices with reservations, so to speak, perhaps because the radical change to a beginning of prosperity is something of a shock to a run-down condition. They have been fearful of the effect of higher prices upon consumer purchasing, also of a speculative and inflationary movement without a substantial foundation. But the improvement of values in agricultural products, higher wages, wider employment and extension of industrial activity so well throughout its various branches (in contrast with the incipient rallies of other times in the depression) suggest that normal recovery is as much a part of the broad change as the artificial activities for inflation. The Administration no doubt furnished the initial impetus through creation of a healthy turn of mind. It will have its part to play hereafter, but normal factors also are to be watched as important elements in the advance.

Will Short Buying Periods Go?

One thing which should result from regulated production in the cotton industry is alleviation from the concentrated buying in short periods, or a tendency toward levelling of the peaks and valleys in manufacture. The current movement has produced something of the old-time anticipatory buying. Secretary Roper in May intimated clearly that the Administration was averse to 24-hour operations, even in periods of rush orders. If the industrial recovery act serves its desired end, the textile industry should be in a position to prod buyers into reasonable and steady anticipation of their requirements.

All branches of textiles are in need of a force to produce evener sale and production through the year. From several angles, it is suggested, the various branches of textile manufacture might do well to get together in a common organization. Both in trade and legislative activities, textiles face common problems and these give signs of increasing rather than diminishing. It is cited by observers in the business that other great departments of industry and commerce are represented unitedly in political matters, while the textile branches in their disjointed efforts suffer a handicap.

THIS section of the textile manufacturing regions of the country since April has made a great start toward recovery of normal conditions. For New England, the "new deal" gives at least a latent hope of restoration of an old hand in the cotton manufacturing game. The rapidity of change in conditions of the section was indicated in the announcement early in June that the Charlton Mills of Fall River, Mass., had adopted a double-shift schedule. Here was a notable expansion in the center which had suffered through the depression probably more than any other cotton manufacturing center of the country.

New England Mill Situation

How the industry will adjust itself under the new regime is obviously a point of vital interest to the northeastern section of the United States. As is clear, the New England states are well supplied with workers to shift operations to the 80-hour schedule and quick moves by the Charlton and Amoskeag units were suggestive of the trend. Early in June a representative of the Amoskeag Company, Manchester, N. H., was reported to be visiting other communities to get additional workers, while the Charlton Mills were anticipating the day of industrial control by planning operations on a five-day, 80-hour week.

New England cotton mills have made notable increases in their purchases of raw material, especially the long staple, both recognizing its asset in their inventories and being moved by present requirements as well as a favorable prospect for goods turnover. As in plans for operation under control, so the mills early were anticipating the adjustment of wages which is part of the whole new industrial program. As much as two months ago, perhaps further back, the cotton industry of New England started making advances in wages and the movement has spread throughout the group of six states.

Amoskeag was among the first to make announcements of wage increases, but that company desired to continue on the old scale to the end of July, because of contracts placed under previous conditions of cost, etc. Treasurer F. C. Dumaine had said that the employees would receive a third of the corporation's profits and the plain to raise wages was in consonance with a rapid spring pick-up in orders. However, the general movement of wages upward without delay and a strike of the Amoskeag workers led to a granting at once of 15 per cent advance for the great Manchester plant. A strike also occurred at the Dover, N. H., plant of the Pacific Mills; but a compromise on 12½ per cent, after a demand for 25 per cent rise, was effected.

This rise of 12½ per cent was the general advance in the leading plants of Massachusetts, Maine, New Hampshire. June also brought into action more machinery and a larger number of workers. Some plants which had been idle for many months, while others in part operation were greatly extended, so workers by tens of thousands are benefitting by more employment and at a larger scale of wages.

Orders received by textile mills of Massachusetts were astonishingly large by comparison with the business at the bottom of the depression a year before. The significance of orders naturally is in the future and mill operations now are reflecting that business. The reports on May orders to the Associated Industries of Massachusetts included a volume to textile mills 400 per cent of that for the fifth month last year. Allowing that the textile industries were in the doldrums in May and June last year, nevertheless a 400 per cent gain on a very small volume of orders is a great contrast and indicative of a notable improvement in the industry. Furthermore, orders were 39 per cent cent more in May than in April and it is pertinent to recall that business betterment began right after March if not before the end of that month.

Conservative spirit always lurks in the background among New England manufacturers, and it has not been without its benefit to the region. While mills find a ready demand from distributors of cotton constructions, they realize that the test of continued activity and the touchstone of prosperity is the buying of the ultimate consumer. Misgivings on this score are natural enough, after the experiences of the past few years, but inflation, rapid gains in the number of workers and higher rates of pay are all factors for that wider public purchasing power which alone is essential. The will to buy will not be lacking any more, after so long a "buyers' strike".

COMMENT ON THE COTTON MARKET

New Orleans, June 16th, 1933.

BECAUSE of the constructive program of the Roosevelt administration there was a further marked improvement in general business throughout the country, due mainly to the rising prices for commodities, especially for cotton, grain and securities, and owning to further improvement in the banking and credit situation, which augurs well for the future. Compared with one month ago, Middling cotton in New Orleans shows a further enhancement in value of $2.25 per bale.

Owing to the revival in commerce and industry, last week's electric power production rose to above last year's and was the largest in several years, reflecting more activity in mill and factory. Carloadings show further gains. News from the lumber industry was the best since last fall. The demand for steel remained urgent. Automobile production is at the highest rate in two years, and tire factories have been running at capacity. In the cotton-textile industry there has been much activity, with gray goods remaining in strong demand at higher prices, many mills were reported running night and day, which is reflected in returns for May showing a marked increase in mill consumption of raw cotton.

With the adjournment of Congress the important World Economic Conference, now in session at London, will attract much attention from the business world. Numerous problems of international import will be up for consideration, such as war debts, tariffs, increase in commodity prices, exchange restrictions, expansion of credit, expenditures by governments to stimulate business, re-establishment of an international monetary standard, and improvement in the status of silver, etc.

Much is expected to come, in the way of further improvement in general trade, of the $3,300,000,000 National Recovery Act by the letting of big contracts for public works, buildings, highways, etc., which will make for increase in employment and a better demand for raw materials. Therefore, since much has been accomplished already in reviving general business, the industrial outlook for the future becomes all the more encouraging.

British trade returns, so far as textiles are concerned, were rather disappointing. Nevertheless, late advices from London denote a feeling of optimism in the British Isles.

CENSUS REPORT FOR MAY.

United States— Bales—	This season	Last season
Consumption of lint, May	620,909	332,372
Consumption of linters, May	76,084	50,941
Consumption, including linters, May	696,993	383,313
Consumption of lint, 10 months	4,838,910	4,264 742
Consumption of linters, 10 months	539,262	552,648
Consumption, including linters, 10 months	5,378,172	4,817,390
Mill stocks, May 31st	1,394,607	1,463,126
Stocks in public storage and warehouses, may 31st	7,320,977	7,614,500
Stocks in mills, public storage and warehouses, May 31st	8,715,584	9,077,626
Active spindles during May	24,571,498	21,633,036
Active spindles during April	23,416,680	23,362,862

May domestic consumption of lint cotton was the largest of any month since October 1929, and as the number of tctive spindles during May this year increased 1,154,818 against a decrease of 1,729,826 in May last year, the outlook would seem to be for further heavy consumption by American mills, at least for the near future, and, perhaps, for sometime to come.

WORLD'S CONSUMPTION OF COTTON FOR NINE MONTHS, AUGUST 1 TO APRIL 30.

Lint cotton— Bales—	This season	Last season
American, about	10,289,000	9,483,000
Foreign, about	7,915,000	8,120,000
All kinds, approximately	18.204,000	17,603,000

By reason of the very large May domestic consumption, world consumption of American is increasing. In fact late returns point to the world consuming about 13,900,000 bales of American this season versus about 12,506,000 last season.

In keeping with the improvement in the demand for goods in the North, there has been a better demand for raw cotton in the South, and while there was a slowing down in the demand recently, it is reviving again, with daily sales at reporting Southern markets running much in excess of this time last year. Of late there has been some improvement in the export movement also.

There is the prospect of China buying about 900,000 bales during the next six or seven months as result of the Reconstruction Finance Corporation, with President Roosevelt's approval, agreeing to loan China $50,000,000 to be used in buying American cotton and wheat. And recently the Jananese Spinners' Federation decided to cease buying raw cotton from British India in retaliation for India's 50 per cent increase in duties on non-British cotton cloths.

In view of the outlook for a large demand from the Orient for American raw cotton next season, if not sooner, and since there is more activity by American mills, and late advices reporting improvement on the Continent, the present outlook for world consumption of American cotton next season is encouraging.

As to the present outlook for the new crop, the situation is much improved by the better weather. Sales of fertilizer have increased, sales of tags, in nine cotton states, during May were for 174,000 tons versus 95,000 for May last year, and from December 1st to May 31st 2,252,000 tons against 1,834,000 for corresponding period last season. During the past month the weather was generally more favorable for the growing crop, especially in the recent dry areas of the Southwest where generous beneficial rains were had over a large area, although it is claimed that more moisture is needed in extreme west Texas and Oklahoma, particularly in the western portion of the latter state.

TOTAL AVERAGE RAINFALL IN TEXAS, IN INCHES.

Year—	1933	1932	1931	1930	Normal
For May	3.93	2.90	2.40	5.15	3.71
November 1 to May 31	15.54	20.91	17.68	16.96	17.07

Concerning the acreage, private estimates indicate an increase ranging from about 6 to 11 per cent, but with prospects of government intervention, it is possible that a very large portion of the planted area may be retired for the purpose of reducing the present large surplus in the interest of higher prices and trade improvement. Therefore, much will probably depend upon what the government will do to reduce the acreage, which it is planning to do to the extent of about ten million acres. Washington's plan for cotton acreage control is expected to be announced shortly.

WHAT THE SOUTHERN MILLS ARE DOING . .

It is reported that the Callaway Mills of Georgia, with plants at LaGrange, Hogansville, Manchester and Milstead are continuing to change over to long draft spinning by the equipment of 15,000 to 20,000 additional spindles which, it is reported, will complete the change-over of all of their machinery to this process.

Report is to the effect that Dwight Manufacturing Company, Alabama City, Ala., are installing additional long draft spinning equipment.

An addition to the weave shed at the Lanett (Ala.) plant of the West Point Manufacturing Company, to cost $75,000, is reported.

Flint River Cotton Mills, Albany, Ga., will erect 25 new brick veneer dwellings for additional employees.

J. E. Sirrine & Company, engineers, Greenville, S. C., have contract for the erection of 40 additional cottages in the village of the Clark Thread Company, Austell, Ga.

Bremen Mills, Bremen, Ga., operated by the J. A. Mandeville interests of Carrollton, Ga., as an affiliate of Cluett, Peabody & Co., have re-opened.

Lawler Hosiery Mills, Carrollton, Ga., have awarded contract to A. K. Adams Company, Atlanta, Ga., for a new two-story and basement building, with dyehouse and boiler room.

New stoker equipment furnished by the McBurney Stoker and Equipment Company, Atlanta, and Copes water regulators and Fisher Pump governors, has been installed at the Scottdale Mills, Scottdale, Ga.

J. W. Sanders has re-acquired the Roundtree Cotton Mills, Meridian, Miss., and the plant is in operation on sheetings and drills.

Ralph S. Richards, of Providence, R. I., has acquired the properties of Manville-Jenckes Company at Gastonia, and High Shoals, N. C. The purchase price was $500,000, according to report.

An additional weave shed is being erected at the Travora Mfg. Co., Graham, N. C.

Burlington Mills, Burlington, N. C., have acquired the Alta Vista Mills, Alta Vista, Va. The plant has 700 looms which will be operated on rayon fabrics.

An expansion program at the Cleveland Cloth Mills and the Eton Mills, Shelby, N. C., involves a total of expenditure of approximately $500,000. Cleveland Cloth Mills is doubling its capacity and Eton Mills will enlarge by one-third.

Standard-Coosa-Thatcher Company, Piedmont, Ala., have installed 50 cards in the No. 2 plant.

Contract for an addition to the Monroe Cotton Mills, Monroe, Ga., has been awarded to A. K. Adams Company, of Atlanta. Robert & Co., Inc., Atlanta, Ga., are the engineers.

Another small addition is being made at the Lane Cotton Mills, New Orleans, La.

Don E. Scott, of Graham, and Irene A Herry and W. H. Holderness, of Greensboro, have incorporated the Scott Knitting Co., Graham, N. C.

A new unit under construction at the Johnson City Mills, Johnson City, Tenn., will increase the plant capacity about 20 per cent.

Baker-Moise Hosiery Mills, Dallas, Texas, have purchased full-fashioned equipment to increase the plant capacity about 50 per cent.

Avondale Mills, Pell City, Ala., have installed a Sanforizing range purchased from Morrison Machine Company.

Georgia-Kincaid Mills No. 1, Griffin, Ga., have made some changes including the remodeling of their boiler and installing stokers, Copes water regulators and Fisher pumps and governors, furnished by McBurney Stoker and Equipment Company, of Atlanta.

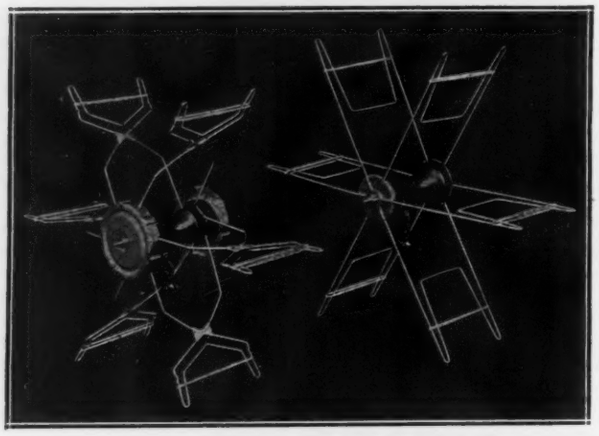
Rocky Mount Mills, Rocky Mount, N. C., have installed some new machinery, including six one-process pickers, four openers and breakers, furnished by H. & B. American Machine Co.

Hanes Dye and Finishing Company, Winston-Salem, N. C., is erecting an addition to cost approximately $10,000.

New Textile Equipment and Publications . . .

Sipp-Eastwood Announces Two New Swifts

Two new light-weight swifts—the "Seco" adjustable wire swift and the "Seco" fixed wire swift—were recently developed by the Sipp-Eastwood Corporation, Keen and Summer Sts., Paterson, N. J., who point out that they keep skeins running true and in balance, and make for higher winding speed and greater convenience, adding that "They avoid the weaknesses of the old-type wood swift; they eliminate the wood sticks coming loose, the hubs and sticks splitting and breaking, and the shifting of cross bands up and down the sticks in a useless endeavor to keep the skein running true and in balance. Both are made of rust-proof unbreakable steel, with six to nine arms, in various sizes to hold either rayon or raw silk skeins."



Two new swifts of adjustable and fixed wire type . .

The new swifts are adjustable and may be regulated to keep the skein tight at all times, it is explained; centrifugal force keeps the arms extended and automatically takes up the slack in the skein. The swifts may be expanded or contracted readily by turning the outside flanges, which are of convenient size to fit the palm of the operator's hand, in opposite directions. The bulk of the weight in the swifts is in the hub. Cotton banding is held at proper tension at all times by the resilience of the cross wires, preventing the bands from sagging. The hubs are standard, it is pointed out, making it necessary to exchange only the wires in changing from one size swift to another.

Gravity and Pressure Principles Used in New Atomizer Head

A new atomizer head combining the gravity and pressure of water principles has been announced by the R. I. Humidifier and Ventilating Company, Boston, Mass. The head consists of an air chamber and a water chamber, separate, and having no connection. As the air pressure comes on, the diaphragm is depressed and opens the water port and the head begins to operate at once. With the air pressure off the water port is closed and the head ceases to operate. The manufacturers claim a double advantage by utilizing both suction and pressure, which, it is pointed out, is unique and results in a low power cost.

At opposite sides of the head are outlets in specially designed nozzles. As the amount of water vaporized is controlled, the air pressure remains constant. According to the manufacturers, with the low air pressure required, 20 pounds, the head will deliver without precipitation 35 pounds of water per hour or any less quantity that may be required. The manufacturers state that the operating or power cost is one-half of that of their previous models.

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New Whipcord Transmission Belt

A new belt featuring an endless-wound whipcord construction with no inelastic stretch has been developed by the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. This belt, known as the Condor whipcord transmission belt, was developed after years of research for high speed, high tension drives which almost invariably require an endless belt, it is pointed out. The Condor whipcord belt is the continuous endless-wound type. Its single layer cord section is the equivalent of six duck plies in strength, the company states, and is much more flexible.

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Circular on Safety Lowering Hanger

The Thompson Electric Co., 1438 West Ninth St., Cleveland, Ohio, manufacturers of safety lowering hangers for lights, to permit reflector cleaning, changing of bulbs, etc., are distributing a circular, "The Power of a Reflector," discussing the importance of keeping light reflectors cleaned and pointing out the use of the safety lowering hanger in making the lights and reflectors readily and conveniently accessible.

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Textile Recorder Year Book for 1933

The 1933 edition of Textile Recorder Year Book has been published by John Heywood Ltd., Deansgate, Manchester, England. This is an annual publication compiled by the staff of the *Textile Recorder* and has been well described as a textile library in brief. The 1933 edition contains a mass of up-to-date statistical data relating to the economics of the textile industry. The technical matter also has been completely revised so that the reader may keep abreast of recent developments. Copies may be secured direct from the publishers, or through Cotton's book department. The English price is seven shillings six pence net.

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Combination Linestarters

A new descriptive leaflet on combination linestarters for squirrel cage and wound rotor induction motors has been published by the Westinghouse Electric and Manufacturing Company. Mounted as a complete compact unit, this line of remote controlled, non-reversing across-the-line type magnetic starters and disconnect switches with or without fuse mountings is described in this leaflet. For use on machine tools, textile machinery, pumps, fans and other applications where remote control is desired.

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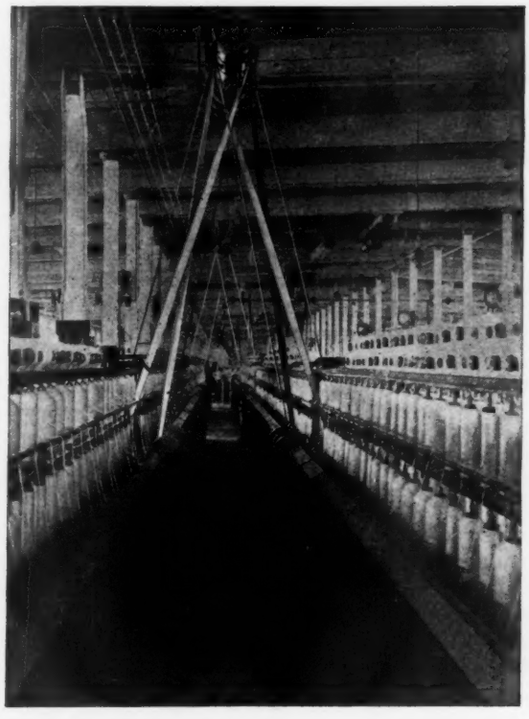
New Sulfogene Brown

Sulfogene Brown CL4R, a sulphur color which produces reddish brown shades of excellent fastness, has just been announced by the dyestuffs division of E. I. du Pont de Nemours & Company. It is described as being

TODAY'S OPERATING CALLS FOR LOWER COSTS



GOODYEAR Belts and Hose are direct profit factors in the textile industry because they cut down costs.

They do so by delivering more trouble-free performance and longer life on the job.

And they are enabled to do that because they are designed and constructed out of Goodyear's own definite, practical experience with cotton mill requirements.

For example, Goodyear THOR Belt (Seamless) has an unequaled record for serviceability on Spinning Frames (as illustrated here), Cards, Slubbers, Spoolers, Looms, Slashers and Breakers.

Goodyear COMPASS (Cord) Endless Belt—*the most nearly stretchless belt made*—is ideal transmission equipment on Pickers, Tappers, Twisters and Vertical Openers.

The highest development in V-belts for the industry today is the Goodyear Emerald Cord V-Belt. For clean-up duty, Goodyear Air Hose excels.

All Goodyear Mechanical Rubber Goods for the textile industry are specified to individual mill needs by the G.T.M.—Goodyear Technical Man. He will call promptly on your request to Goodyear, Akron, Ohio, or Los Angeles, California, or your nearest Goodyear Mechanical Rubber Goods Distributor.

Goodyear is represented in the South by authorized Goodyear Mechanical Rubber Goods Distributors conveniently located with relation to your mills and able to supply promptly all Goodyear Mechanical Rubber Goods for the textile industry

THE GREATEST NAME IN RUBBER

GOODYEAR TEXTILE BELTING

equal in strength to Sulfogene Bordeaux CF but very much bluer and noticeably duller. Although apparently similar to the sulfur bordeaux on account of its shade, it is distinctly not a dyestuff of this type. Sulfogene Brown CL4R is said to be very fast to acids, ammonia, light, washing and water, and also satisfactory for acetic acid cross-dyeing. It may be dyed on yarn or piece goods, and does not change shade a great deal through aftertreatments.

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New 100 Series Finnell Scrubbing Machines

Finnell System, Inc., manufacturers of electric scrubbing and polishing machines and scouring powder, Elkhart, Indiana, have announced the new 100 series Finnell machines which presents a number of new features. The new machine is more compact, more silent; and larger motors are used for making them more powerful. An important

New scrubber.

feature is that it is possible to use an interchangeable brush ring and thus convert a larger machine into a smaller machine by merely attaching a smaller guard and brush ring. This is especially important, it is explained, since in most plants, there are some highly congested areas requiring a smaller size floor machine than the machine which should be used for the more open areas.

The new machines are finished in aluminum and chromium plate. Rubber bumpers protect furniture and baseboards. It is pointed out that a 53 per cent increase in the efficiency is secured by the improvements embodied in the new design machine.

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1933 International Edition of the Cotton Trade Journal

Its 1933 International Edition has been published by *The Cotton Trade Journal*, New Orleans, La. of which Francis Hickman is president and publisher.

Featuring American cotton, this seventh annual review of the cotton activities of the world, is the most comprehensive as well as the most beautiful of all of those which have been issued by *The Cotton Trade Journal*. Contributors from all parts of the world are included among its writers this year, thereby giving an "international outlook" to its calm analysis of the events in the cotton markets of all countries during the past 12 months. The 1933 International is profusely illustrated throughout its 120 pages.

Perhaps the most important of the many articles in this publication is that contributed by John T. Egan, senior agricultural economist, in charge of field work division of cotton marketing, Bureau of Agricultural Economics, United States Department of Agriculture. His lengthy and thorough treatise on the cotton producing regions of the United States, their soils and growth, is a comprehensive analysis of the subject which has never before been obtainable in any form.

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New G.E. Starting Switch for Fractional Horsepower Motors

A small, hand-operated starting switch, for providing complete protection against stalled-rotor current and injurious overload conditions, has been developed by the General Electric Company for use with either single-phase a-c. or d-c. fractional horsepower motors. The a-c. switch is available in single and double-pole forms. The new switch, designated as CR1061, affords the following features: complete overload protection, a positive snap-action mechanism which is trip-free on overload, a sturdy and compact construction, and adaptability for mounting in purchasers' enclosures. All molded parts are made from Textolite and the large contact tips are pure silver. The metal parts will resist corrosion. The switch has been tested and listed by the Underwriters' Laboratories.

To facilitate installation, the CR1061 switch has been made available in several forms which may be classed as follows: open-type switches for applications where the purchaser wishes to provide his own enclosure enclosed-type switches for general purpose applications; and switches for Class I, Group D hazardous locations.

The open-type switch is the basic form. From the standpoint of operation, this switch may be supplied with an "on"—"off" knob for operation directly by hand or with a knob for spline-shaft operation. The latter construction is required where switches are to be mounted in explosion-proof enclosures for Class I, Group D hazardous locations. Either type of construction is well adapted for mounting in a purchaser's enclosure.

The enclosed-type switch for general purpose applications consists of one of the open-type forms with a hand-operated "on"—"off" knob, mounted in a black-enameled, drawn-shell steel case which has an engraved flat aluminum cover. This form is designed for applications where wall mounting is desirable. A knockout for conduit is provided in both the top and bottom of the case, and two conduit fittings are furnished with each switch. The enclosed-type switch may also be had in suitable enclosures for flush mounting.

The CR1061 switch for Class I, Group D hazardous locations consists of one of the open-type switches for spline-shaft operation mounted in a heavy cast-iron case with wide, machined flanges. The cover has a strong operating handle which engages the switch knob. This switch is well adapted for building directly into fractional horsepower motors where it is necessary that both motor and control be suitable for Class I, Group D hazardous locations.

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Thermoguard Motors

An illustrated circular giving complete information on Westinghouse Thermoguard motors and their applications has recently been issued by the Westinghouse Electric and Manufacturing Company. These radically new self-protected motors may be used on all applications, it is stated, with the assurance of full protection under all conditions of operation. Should the motor windings become dangerously overheated, the motor may be so connected as to give a warning signal or to be disconnected from the line.

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Waits with Precision

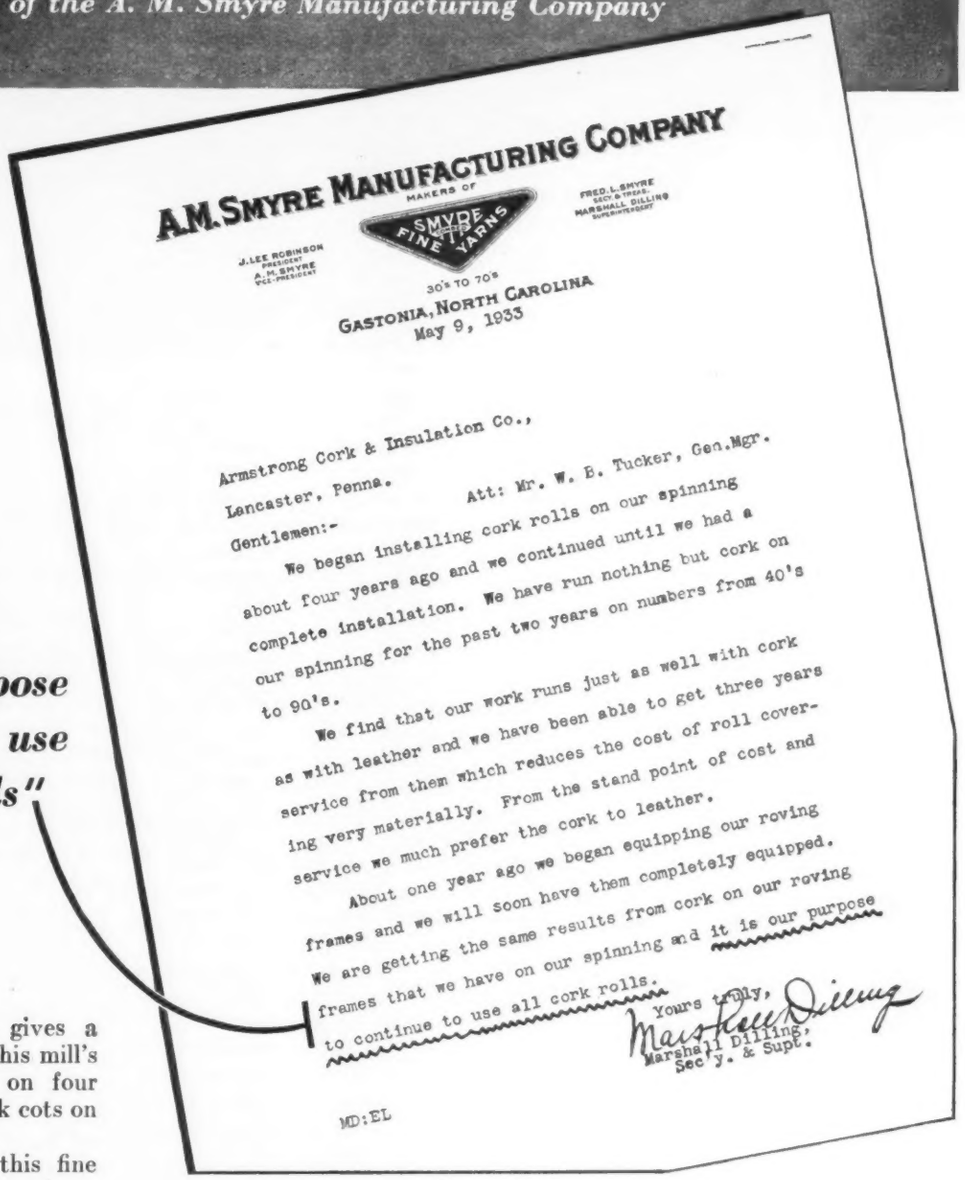
E. G. Waits, for many years overseer of carding at the Newberry Cotton Mills, Newberry, S. C., is now representing the Precision Gear & Machine Co., Charlotte, N. C., manufacturers of Stewart compounds and Precision one-process picking systems.

This concern has announced that within recent weeks, their force has completed changing over pickers to the Precision one-process method, in the following plants:

Linn Cotton Mills, Landis, N. C.; Marlboro Cotton Mills, McColl, S. C.; Superior Yarn Mills, Troutman, N. C.; Issaqueena Mills, Central, S. C., and Courtenay Mfg. Co., Newry, S. C.

"From the standpoint of cost and service we much prefer cork . . ."

writes Mr. Marshall Dilling, Secretary and Superintendent of the A. M. Smyre Manufacturing Company



A. M. SMYRE MANUFACTURING COMPANY
MAKERS OF
SMYRE FINE YARNS
30's TO 70's
GASTONIA, NORTH CAROLINA
May 9, 1933

Armstrong Cork & Insulation Co.,
Lancaster, Penna.
Att: Mr. W. E. Tucker, Gen.Mgr.

Gentlemen:-

We began installing cork rolls on our spinning about four years ago and we continued until we had a complete installation. We have run nothing but cork on our spinning for the past two years on numbers from 40's to 90's.

We find that our work runs just as well with cork as with leather and we have been able to get three years service from them which reduces the cost of roll covering very materially. From the stand point of cost and service we much prefer the cork to leather.

About one year ago we began equipping our roving frames and we will soon have them completely equipped. We are getting the same results from cork on our roving frames that we have on our spinning and it is our purpose to continue to use all cork rolls.

Yours truly,
Marshall Dilling
Marshall Dilling,
Sec'y. & Supt.

MD:EL

"It is our purpose to continue to use all cork rolls"

MR. Dilling's letter gives a frank expression of his mill's experience. It is based on four years' steady usage of cork cots on a production scale.

It is significant that this fine combed yarn mill is using Armstrong's Seamless Cork Cots not only to lower production costs but also to maintain the yarn quality on which its enviable reputation has been built.

Smyre's experience is typical of more than 100 leading manufacturers of cotton yarns, embracing over 6,000,000 spindles on all classes of work. Facts and figures from these mills' records will be furnished gladly. Armstrong Cork & Insulation Company, Textile Division, 923 Arch St., Lancaster, Pennsylvania.

Armstrong's SEAMLESS CORK COTS
FOR SPINNING AND CARD ROOM ROLLS

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

N. E. Agent for Gaston County Dyeing Machine Co.

Gaston County Dyeing Machine Co., Stanley, N. C., announce that they have appointed Burnham & Ingalls, 50 Church St., New York City, as their representatives in the New England territory.

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Celanese Announcement.

Celanese Corporation of America have distributed the following announcement: "To correct the many erroneous statements which have appeared of late in the press, that control of Celanese Corporation of America has been obtained by one of the large rayon producing companies in America, Celanese Corporation of America wishes to state that it is not controlled by and has no connection whatsoever with any rayon company, nor has there been any change in the management."

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Changes in Houghton Company Personnel.

The board of directors of E. F. Houghton and Company, Philadelphia, Pa., has announced the following changes and promotions in executive personnel:

Louis E. Murphy, president since 1929, continues in that capacity. Major A. E. Carpenter, first vice-president and treasurer, resigned the latter office and was elected general manager. George W. Pressell, second vice-president and secretary, resigned the secretaryship and was elected assistant general manager and director of sales. Dr. R. H. Patch, director of plants, has been elected treasurer. A. E. Carpenter III, assistant to the general sales manager, was elected secretary. George S. Rogers, formerly assistant general sales manager in charge of the St. Louis and Chicago offices, was appointed general sales manager with headquarters in Philadelphia. Sales of the company for the month of May 1933 were reported the highest in over a year, being 24.5 per cent above those of the same month in 1932.

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Clemson Places All Textile Eng. Graduates.

The textile department at Clemson College, S. C., awarded 31 degrees this year, 13 of which were in textile engineering. All of the textile engineers were placed in the industry before graduation, as well as two students taking special work in textiles. Two seniors in textile industrial education were also placed. The B.S. degree in textile chemistry and dyeing was received by 16 men, most of whom were placed. J. V. Walter, a senior in textile engineering, was awarded the National Association of Cotton Manufacturers medal for highest excellence in textile engineering. E. W. Hollingsworth, majoring in textile chemistry and dyeing, received the *Textile Colorist* prize for the best work in textile chemistry.

:: :: ::

Graduates in Textiles at Georgia Tech.

Fifteen students received a B.S. degree in textile engineering from the A. French Textile School of the Georgia School of Technology, Atlanta, Ga., at the commencement exercises held on June 5th. The class also included two graduates in the five-year co-operative course. The names and addresses of those receiving degrees were:

Alva Dean Zellner, Forsyth, Ga., with honor: Levi Joel Ball, Jackson, Ga.; William Shepherd Barefield, Jr., Lookout Mountain, Tenn.; Cladius Albert Beall, Jr., Dublin, Ga.; John Thomas Braswell, Jr., Atlanta, Ga.; Thomas Nathaniel Estes, Gay, Ga.; James Alexander Fife, Gay, Ga.; Hugh Tuten Gooding, Macon, Ga.; Hughey McHenry Jackson, Atlanta, Ga.; Robert William Lawson, Gainesville, Ga. Thomas Jarman McCown, Fayetteville, Tenn.; James Emery Nash, Atlanta, Ga.; Robert William Price, Atlanta, Ga.; Leo Sudderth, Jr., Atlanta, Ga.; and Leonard Marbrey Thompson, Decatur, Ga.

The medal given by the National Association of Cotton Manufacturers for the highest scholastic average in all subjects was won by Alva Dean Zellner, and the one presented by the Cotton Manufacturers Association of Georgia, for particular aptitude in textile subjects, was received by James Alexander Fife.

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Willcox & Gibbs Enlarges Sales Force.

Willcox & Gibbs Sewing Machine Company, 656-658 Broadway, New York City, report that a notable improvement in business in April and May necessitated the immediate strengthening of the sales force of the company throughout the country by the addition of a number of salesmen. A favorable sign to which the company points is that the demand for the company's products is general throughout the country and is not confined to any one section.

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Lechler, Ligon and Brooks Represent Adolff Bobbin Co.

Adolff Bobbin Company, Inc., 576 Davis Avenue, Kearny, N. J., for more than sixty years manufacturers of hardpaper bobbins, tubes and spools, have recently announced the appointment of sales agents in the South. J. Alfred Lechler, 2107 E. 7th St., Charlotte, N. C., represents the company in North Carolina, Virginia, and West Virginia. L. S. Ligon, 45 Cureton St., Greenville, S. C., is the representative in South Carolina and Eastern Tennessee; and Fred P. Brooks, Box 941, Atlanta, Ga., is the representative in Georgia, Alabama, Louisiana, Mississippi, and Western Tennessee.

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Changes in R. & H. Personnel.

Dr. E. A. Rykenboer has been appointed general manager of The R. & H. Chemicals Department of the du Pont Company to succeed C. K. Davis, who was recently elected president and general manager of the Remington Arms Company, Inc.; and Milton Kutz has been appointed assistant general manager of the department to succeed Dr. Rykenboer.

Dr. Rykenboer held important positions in the Roessler & Hasslacher Chemical Company before it was taken over by the du Pont Company. He was first general superintendent and later vice-president of that company. Since the R. & H. Chemicals Department was created in the du Pont Company, he has been assistant general manager.

Mr. Kutz, who becomes assistant general manager of the R. & H. Chemicals Department, has had a wide experience also in the Roessler & Hasslacher Chemical Company. He was successively branch office manager, general sales manager, and vice-president and manager of sales in that organization. Since the formation of the R. & H. Chemicals Department in the du Pont company, he has been director of sales.

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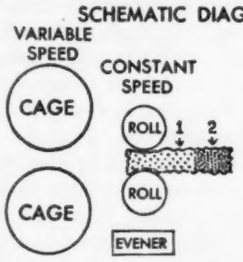
Hygrolit Makes Changes in Southern Representation.

Hygrolit, Inc., 572-576 Davis Avenue, Kearny, N. J., manufacturers of conditioning machines for textile mill equipment, have announced some changes in their southern representation. J. Alfred Lechler, 2107 E. 7th St., Charlotte, N. C., is now covering Virginia, West Virginia and North Carolina for the company; and L. S. Ligon, 45 Cureton St., Greenville, S.

SCHEMATIC DIAGRAM - DELIVERY SECTION

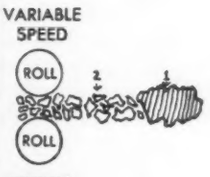


1. Light places permit rolls to come together. This motion acts on evener mechanism, which causes cages and calender to slow down to take on more cotton.

2. Heavy places cause rolls to spread apart This motion acts on evener mechanism, which causes the cages and calender to speed up to take on less cotton.

RESULT - UNIFORM DENSITY

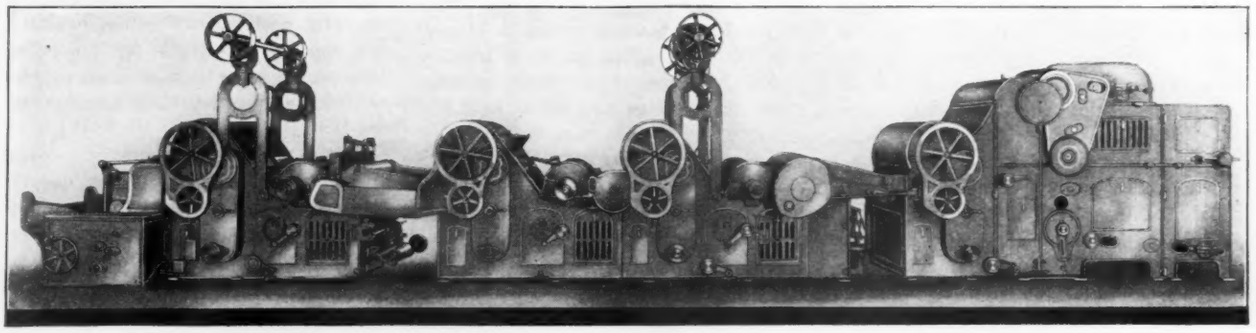
SCHEMATIC DIAGRAM - FEED SECTION



1. Large tufts spread rolls apart. This motion acts on the evener mechanism which in turn slows down the rolls, allowing more time for beating.

2. Small tufts allow rolls to come closer together. This motion acts on the evener mechanism, which in turn speeds up the rolls, allowing less time for beating.

RESULT - UNIFORM OPENING



OVER 99% PRODUCTIVE EFFICIENCY *with H & B's Patented System of Evening*

IF EVEN YARNS ARE DESIRED it is necessary to start with even laps.

Unsolicited reports from mills using the new H & B One Process Picking state the following:—

In one case only 4 laps out of 700 had to be reprocessed because of unevenness or because of any other reasons; in another case only 4 laps out of 2500; and in a third case only 5 laps out of 1300. In other words the average productive efficiency in the three mills was 99 $^{99}/_{100}$%.

The H & B is unique among one-process picking systems in that it provides a two-fold method of evening (see diagram).

The first evener, working in the feed section, controls the speed of the feed rolls as in other systems, and provides for uniform opening.

The second evener, working in the delivery section, operates on our patented variable speed calender and controls the distribution of the cotton upon the cage. The feed rolls run at a constant speed, while any heavy or light places in the lap act on the evener, causing the cage and calender rolls to slow down or speed up as required.

Thus, while the first evener provides for *uniform opening*, the second evener provides for a *lap of uniform density* throughout.

H & B laps, made by this system, vary less than $\frac{3}{8}$ to $\frac{3}{4}$ of an ounce from yard to yard.

Since H & B One Process Picking offers the usual savings in power and labor and the usual increased production *Plus* this extra quality in output, why not thoroughly investigate? A letter on your business stationery will bring further information, or, if you so request, one of our representatives.

H & B AMERICAN MACHINE COMPANY
Cotton Preparatory and Spinning Machinery
PAWTUCKET, RHODE ISLAND

BOSTON OFFICE
161 Devonshire St.

ATLANTA OFFICE, 815 The Citizens and Southern National Bank Bldg.

Even Yarns Start With Even Laps
H & B ONE PROCESS PICKER

C., is the Hygrolit representative in South Carolina and Eastern Tennessee. Georgia, Alabama, Louisiana, Mississippi and a part of Tennessee will continue to be covered by Belton C. Plowden, Griffin, Ga.

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Swan-Finch Puts Wolfe in South

Swan-Finch Oil Corp., 205 East 42nd St., New York City, have announced that C. E. Wolfe is now sales manager of the southern division of the company. Mr. Wolfe is permanently located in the South, and is doing contact and engineering work for Swan-Finch Oil Corp. in connection with their distributors, the McLeod companies—Odell Mill Supply Company, Greensboro, N. C.; Greenville Textile Supply Company, Greenville, S. C.; and the Atlanta Textile Supply Company, Atlanta, Ga.

:: :: ::

Texas Transfers Baker to Spartanburg

P. H. Baker, of The Texas Company, has been transferred from Columbus, Ga., to Spartanburg, S. C., from which point he will represent the company in Georgia and South Carolina in connection with the TexSpray system of conditioning cotton.

:: :: ::

Comer and Kimmel Form Machinery Concern

L. Kimmel and B. T. Comer have announced the organization of Comer-Kimmel Machinery Co., 308 Ivy St., Atlanta, Ga., offering an improved service in the handling of used textile machinery. A complete service is rendered in the appraisal, purchase and shipment of used machinery, including the complete liquidation of textile plants. Both members of the firm have had long experience in the textile field and are well known in the industry.

:: :: ::

Cotton Tarpaulins as Salvage Covers.

Cotton tarpaulins used as salvage covers in fire-fighting service are contributing to the saving of millions of dollars worth of property annually in the United States, according to the New Uses Section of the Cotton-Textile Institute. The covers are employed by insurance salvage corps and many municipal fire departments to protect merchandise and household effects from damage by water and embers while fires are being fought.

It is estimated that at least 500,000 square yards of cotton fabric are now in service for this salvage work. Corps maintained by the National Board of Fire Underwriters in eighteen important cities have so effectively demonstrated the value of salvage operations that this work is more widely becoming an auxiliary service in municipal fire departments. Many instances of impressive savings from a comparatively small sum invested in covers and other equipment of a salvage corps are recorded.

In Pittsburgh, after the equipment of a salvaging corps with some 50 covers and other appurtenances, it was estimated by the Fire Chief that property and merchandise valued at almost $500,000 were saved in an 8 months period. Figures from New Orleans show that savings amounting to $237,000 resulted from salvage work during a 3 months period in 1932.

The Fire Prevention and Engineering Standards Committee of the National Underwriters reports that a recent fire which did $2,000 damage to the roof of a fine residence in a New York suburb was prevented from doing a single penny's worth of damage to costly household effects through the use of protective covers.

Ten patrol companies are maintained by the insurance underwriters in New York to co-operate with the municipal fire department companies. Their equipment includes 4,193 stock covers and 59 roof covers. Chicago's patrols have 1,797 covers. A municipal corps attached to the Fire Department of Los Angeles has 450 covers. These protective spreads made of canvas or other processed cotton fabrics are usually 12x18 feet in dimension. Since the covers cost only $15 to $20 apiece, no large investment is involved in a supply of several hundred for fire department service.

Where municipal salvage corps are being organized, the National Board of Fire Underwriters recommends that from 40 to 100 covers be allotted to each corps. The Board, however, emphasizes that salvage work is not restricted to cities or large towns. It has been effectively carried on in small communities with from 2 to 6 covers carried on each piece of apparatus. The Board's New York office furnishes instructions without charge, about the organization of salvage corps.

:: :: ::

Cotton Style Shows.

Aside from retail store sales, one measure of the growing development of consumer interest in cottons for both apparel and household purposes, according to the Cotton-Textile Institute, is the sustained demand for style shows and exhibits. During the first five months of this year, the Institute has participated in more than 230 presentations in 36 states.

Attendance figures at single exhibits range from 300 to 5,000 excluding the several hundred thousand visitors each year to the U. S. National Museum, Washington, D. C., where an educational display of cottons is renewed each season by the Institute.

Loan exhibits sent out by the Institute included showings of dress fabrics for the current season, children's garments and infants' clothes, interior decoration fabrics, curtains and drapes, style show dresses and accessories, photographs, posters, raw cotton exhibits, and special collections for museums. Style shows were in most cases supplemented with fashion talks prepared by the Institute.

These various presentations were given in high schools, colleges, department stores, trade expositions, museums, fashion schools, and also at meetings of women's clubs, home economic teachers, 4-H clubs, home demonstration group leaders, and "farm and home week" programs under state university sponsorship.

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Hartmann Appoints Southern Agents.

Hartmann Textile Machinery Corporation, 572-576 Davis Ave., Kearny, N. J., have appointed the following representatives in the southern territory:

J. Alfred Lechler, 2107 E. 7th St., Charlotte, N. C., for Virginia, West Virginia and North Carolina.

L. S. Ligon, 45 Cureton St., Greenville, S. C., for South Carolina and a part of Tennessee.

Fred P. Brooks, Box 941, Atlanta, Ga., for Georgia, Alabama, Mississippi, Louisiana and the rest of Tennessee.

The company has been in business since 1837, manufacturing a complete line of spinning and weaving machinery.

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Net-Weight Cotton Selling Recommended to Growers.

Some cotton growers believe that by selling cotton on gross weight they make a profit on the bale coverings. Actually, they receive practically nothing for the bale coverings since the market price discounts the quantity of tare. When cotton is actually worth 10½ cents a pound net, for example, the grower gets only 10 cents a pound gross, says the Bureau of Agricultural Economics, U. S. Department of Agriculture.

The fallacy that tare is sold at cotton prices has tended to prevent establishment of a net-weight cotton selling system in this country, and the covering of bales with more satisfactory and lighter weight materials, according to the bureau. The bureau says that the gross-weight system of selling Ameri-

(*Continued on page* 60.)

LOWERED COSTS—

Increased Efficiency——→

The Economy of the Sonoco Cork Cot starts with a lower first cost.

But of equal importance are its remarkable wearing qualities. Without resurfacing its life is longer than the average leather covered roll—and it can be easily and cheaply rebuffed several times, each time renewing the same original long-life drafting surface. Sonoco also supplies an efficient rebuffing machine at very low cost.

Write for our attractive trial offer that will explain why many mills have reduced their roll covering costs to a minimum with Sonoco Cots.

SONOCO

RE-ENFORCED CORK COTS

THIS simplified Roll-Coverer takes all the mystery out of roll covering, simplifying and minimizing the costs of this operation. Sonoco Cots are applied in a few seconds with no other equipment or materials required. Simply dip *roll* in water, place cot and roll in position, a stroke of the lever and the roll is covered. The gummed cloth inner lining, exclusive with the Sonoco Cot, causes it to freeze in position instantly.

SONOCO PRODUCTS COMPANY

Hartsville, South Carolina

Main Plant and General Offices, Hartsville, S. C.

Branch Plants at:
Rockingham, N. C.
Plainfield, N. J.
Brantford, Ontario

Eastern Sales Office:
709 W. Front St.,
Plainfield, N. J.

PERSONAL NOTES
about Men You Know

Through an inadvertent error, a line was omitted from the note in these columns last month concerning L. F. MOORE, and the item gave no indication of Mr. Moore's connection. It should have stated that Mr. Moore has been made sales representative in the Southeast for the Akron Belting Company, of Akron, Ohio, with which he has been connected for a number of years. He succeeds the late L. L. HASKINS in this territory.

ARTHUR P. BISHOP has been appointed general superintendent of the Howard-Arthur Mills, Fall River, Mass., in recognition of his services for the past year with the company. Mr. Bishop has been connected with leading mills in New England, and was with the King Philip Mills of Fall River for 18 years.

Mr. Bishop.

W. L. PHILLIPS, formerly efficiency manager of the J. W. Sanders Cotton Mills in Mississippi and Alabama, has become manager of the J. W. Sanders plant No. 3 at Meridian, Miss., which was recently re-opened. C. B. WALLS, formerly superintendent of the Aponaug Mfg. Co., West Point, Miss., is overseer of carding and spinning at Meridian, and W. E. ELLENBURG, formerly with the Alden Mills, Meridian, has become night overseer of carding and spinning at the J. W. Sanders mill there.

BROWN MAHON, who has been connected with the sales promotion department of American Enka Corporation in New York, has accepted a position with the Dunean Mills, Greenville, S. C., as assistant manager. Mr. Mahon originally was in Greenville and was for many years assistant treasurer of the Judson Mills there.

ALLEN JONES has resigned as superintendent of Clyde Fabrics, Inc., Newton, N. C., to become superintendent of the Muscogee Mfg. Compnay, Columbus, Ga., where he succeeds JESSE M. PAYNE.

W. C. BOBO, who recently organized the Bobo Weaving Mill at Spartanburg, S. C., has become connected also with the Dilling Mills, Kings Mountain, N. C.

W. EARL CRENSHAW, superintendent of the Glenn Mfg. Co., Lincolnton, N. C., has been made in addition general superintendent of the group of mills operated by W. W. GLENN, as a part of the estate of the late DANIEL EFIRD RHYNE. These include the Cherryville Mfg. Co., Howell Mfg. Co., and Wildan Mfg. Co., Cherryville, N. C., and the Laboratory and Lincoln Mills, Lincolnton, N. C.

J. Y. JONES, for 27 years overseer of spinning at the Newberry Cotton Mills, Newberry, S. C., has been appointed superintendent to succeed the late J. MARION DAVIS, who served in that capacity for 30 years. Mr. Jones began work in the Newberry mills as sweeper, and, following several promotions, became overseer of spinning in 1906 and has held that position since.

R. WRIGHT CANNON, a graduate in the textile department at the Georgia School of Technology, Atlanta, has been named assistant superintendent of the Newberry Cotton Mills. Mr. Cannon was graduated at Georgia Tech in 1930, and was awarded the gold medal given by the Textile Operating Executives of Georgia for general proficiency in textile school work. FRANK JONES has been made overseer of spinning at Newberry.

J. H. CLARK, formerly overseer of spinning at the Smithfield Mills, Inc., Smithfield, N. C., has become superintendent of Carter Mill No. 1, Lincolnton, N. C.

ROBERT C. BOGER, JR., has been made vice-president of Boger & Crawford, manufacturers of mercerized yarns. Mr. Boger is a graduate of the Philadelphia Textile School and is located at Lincolnton, N. C., where Boger & Crawford operate a spinning mill.

GEORGE W. SHEARON has been appointed district manager for J. B. Ford Company, of Wyandotte, Mich., for the states of Georgia, North Carolina and South Carolina. Mr. Shearon has been with the company for over ten years and has moved from the Jacksonville office to the Atlanta office, 1116 Hurt Bldg., which is headquarters for the three states named. F. M. OLIVER, the textile representative of J. B. Ford Company in North Carolina, has returned to the territory after being on special work for several months. He is making his headquarters at Greensboro, N. C.

GEORGE S. HARRIS has accepted an executive position with the Lancaster Cotton Mills group, with plants at Lancaster, S. C., Fort Mill, S. C., Kershaw, S. C., and Chester, S. C., of which ELLIOTT WHITE SPRINGS is president. Mr. Harris has established his residence in Charlotte, N. C. He formerly was president and manager of the Exposition Cotton Mills, Atlanta, president of Hunter Securities Company—and for the past year or so has been connected with the American Red Cross in charge of converting the cotton turned over to the Red Cross from the Federal Farm Board. He is a former president of the Cotton Manufacturers Association of Georgia and the American Cotton Manufacturers Association.

J. T. WARDLAW has been made treasurer of the Drayton Mills, Spartanburg, S. C. He was formerly assistant treasurer. B. W. MONTGOMERY, president and treasurer, resigned because of ill health. G. H. MILLIKEN, of New York City, is now president.

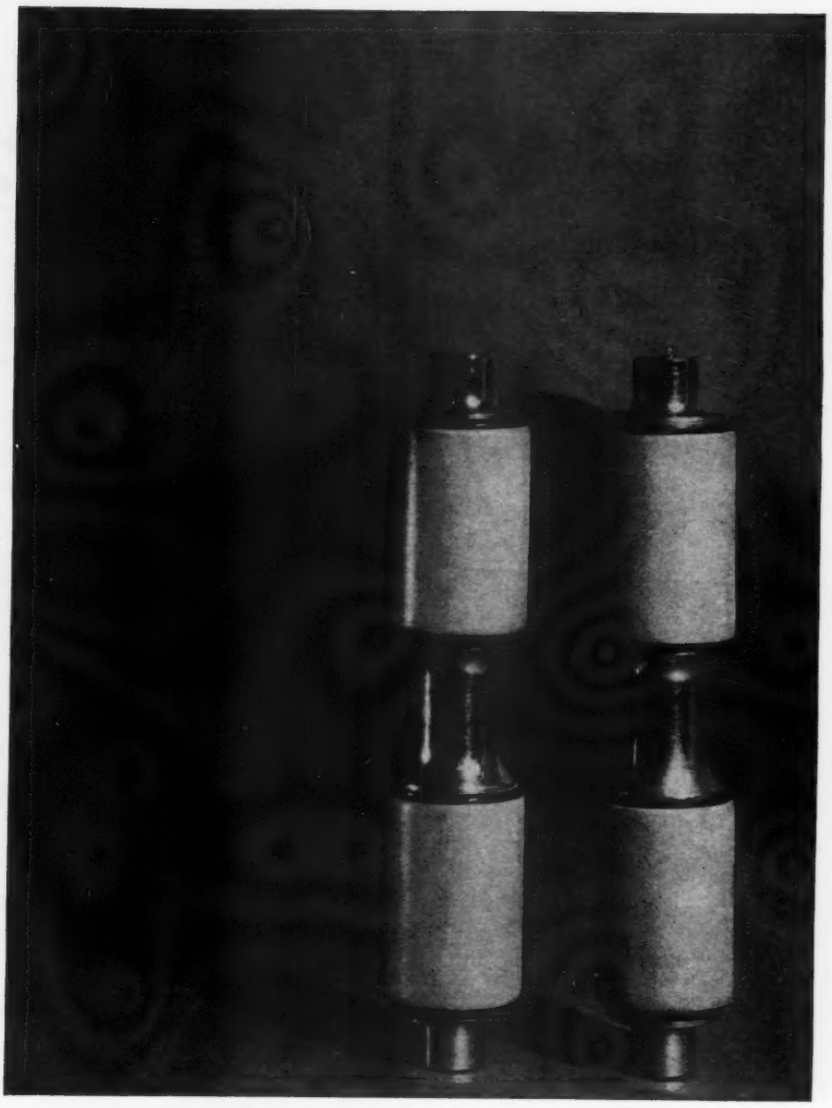
W. A. HUNT has become overseer of carding at the Sibley Manufacturing Co., Augusta, Ga.

R. C. JONES, formerly purchasing agent for the Tubize-Chatillon Corporation at Hopewell, Va., has been made manager of the company's plant at Rome, Ga., succeeding C. E. BALDWIN, resigned.

FREDERICK M. FEIKER, for the past two years director of the Bureau of Foreign and Domestic Commerce, Washington, has been selected by the Textile Foundation to supervise a survey of textile education under the Foundation's program to recommend an educational program. Mr. Feiker at one time was editorial director of McGraw-Hill Publishing Company. He later was special assistant to HERBERT HOOVER when Mr. Hoover was secretary of commerce, and was then managing director of the Associated Business Papers. From that position he returned to Washington where he organized the Census of Distribution and aided in establishing the government's work in simplified practice. He is an electrical engineer by early training.

Obituary notices will be found this month on page 60.—The Editor.

Excellence in Spinning Results with SPINNA CALF

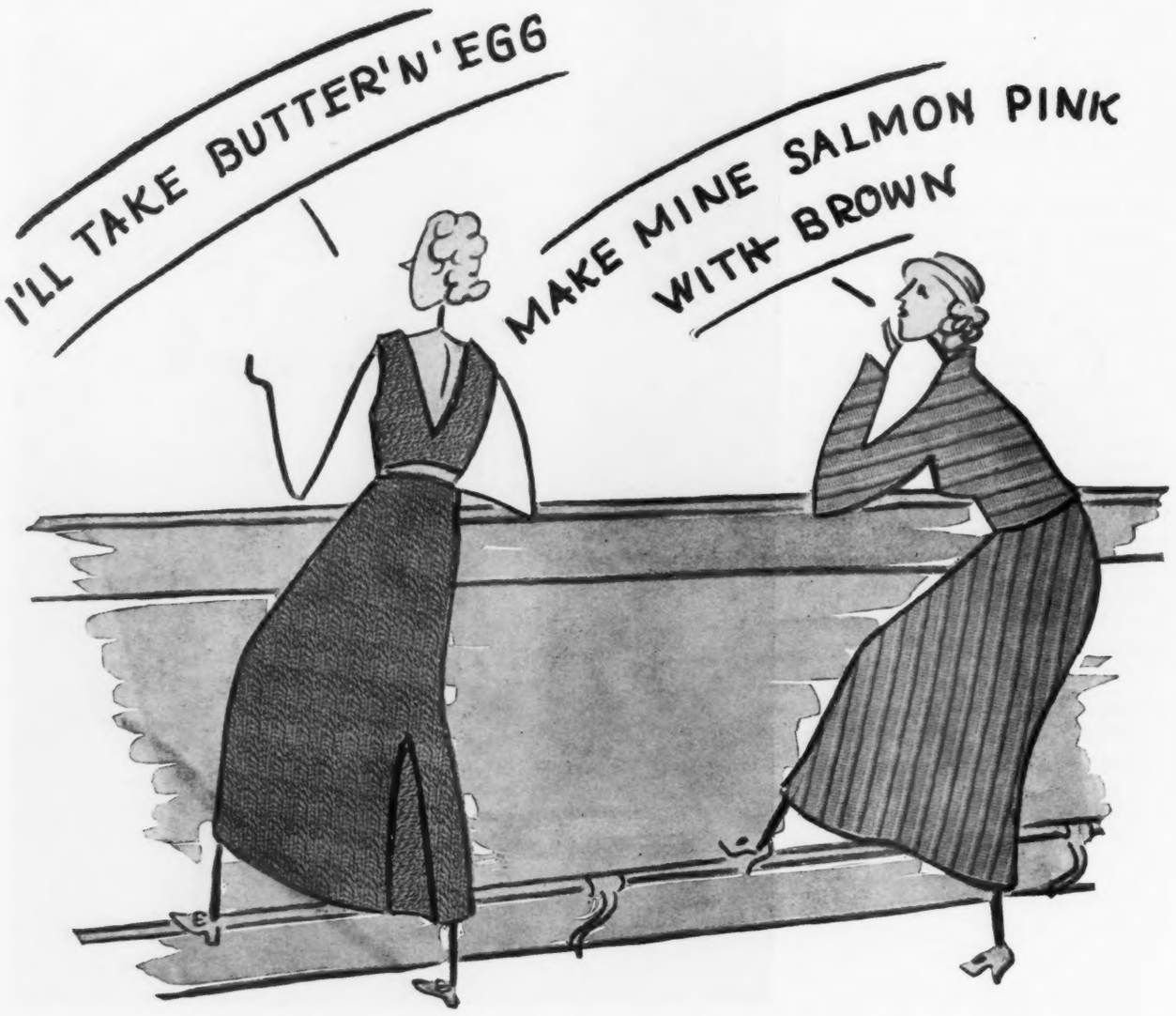


SPINNA CALF continues to make a reputation for itself in the spinning of smooth, even yarns, especially where quality of production is the goal.

A. C. LAWRENCE LEATHER CO.

Specialists in Textile Leathers

BOSTON, MASS. PEABODY, MASS. GREENVILLE, S. C.



DU PONT CELANTHRENE COLORS*

give you* all *the newest color combinations on Cellulose Acetate fabrics

THERE are going to be a lot of these unusual, fetching color combinations in the next few months. (So Paris says.) And many of them are going to be on Cellulose Acetate fabrics. You would do well to look over this list of du Pont Celanthrene Colors and consider their excellent dyeing characteristics.

The exceptional fastness properties of these Celanthrene Colors make them highly desirable for use on dress-goods, linings, underwear, hosiery, draperies . . . in fact, 'most every type of material made from Cellulose Acetate fabrics.

They are suitable for dyeing yarn or piece goods. Used alone or in combination, they produce brilliant, clear shades and possess important advantages in light and wash fastness. Write today for Bulletin which gives the individual characteristics of each shade.

DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INC.

Organic Chemicals Department, Dyestuffs Division, Wilmington, Delaware

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AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

The Story of Old Timer's Methods of Working and Management

Part Thirteen—Continued from May Issue

OLD-TIMER and Jim are still in the slasher room, in this, the thirteenth installment. Twelve installments, which have brought them this far through the mill, have already been published. Readers interested in securing these may inquire of the editorial department for copies.

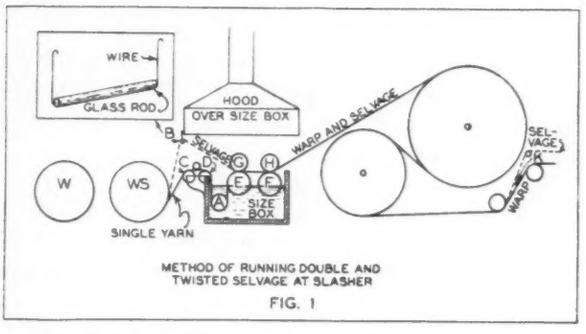
(Note: Since this series is written in conversational style, it should be borne in mind that those paragraphs in regular type represent OLD-TIMER's part of the conversation, and those in *italics* are JIM's part.

Those chains with hooks on them are a pretty nifty idea, OLD-TIMER. *That enables a slasher man to doff his loom beam by himself, without calling the other slasher man to help him.*

Yes, I noticed that sometimes when one man would be ready to doff, the slasher man next to him would be cutting a lap, or something, and could not come to help him right then—so I ordered this chain and round iron rod and fastened them to the ceiling with an adjustable turn buckle and a hook on each chain. Now, when the man is ready to doff he merely places the hook on the loom beam gudgeons and lets the beam swing out of the way and hang there until he puts in his empty beam and gets the slashers running. Along comes the beam roller, who slips his truck under the swinging beam and is gone to the tying-in room. It saves a little time, makes the doffing easier because they do not have to lift the beam, and saves calling another slasher man to help.

Hey, OLD-TIMER, *what is that thing hanging on your slasher hoods that looks like a swing for an acrobat?*

Oh, that! JIM, that is a method we have found to be very useful in running double and twisted selvage at the slasher. First, we did away with the separate creel for the spools of twisted yarn, and went to the warper and put the spools of twisted yarn right in the warper creel so that the twisted selvage would all be on one warper beam for a set. By skipping every other dent in the warper comb where the double and twisted threads are, prevents them from piling up on the warper beam. Then we put the warper beam containing the double and twisted threads next to the size box and run the twisted threads through the slasher as shown in the accompanying sketch, Fig. 1. You will note that the selvage threads are run *over* the size box up to the guide, *B*, which is hooked onto the hood over the size box. Thus, the selvage threads do not pass through the size, but join the single yarn at the first squeeze roll, after the sheet of warp has passed through the size underneath the immersion roll. This guide for the selvage yarn is merely a glass rod with a round iron rod run through it as shown in the inset sketch, and this stand merely hooks on to the hood as shown.



METHOD OF RUNNING DOUBLE AND TWISTED SELVAGE AT SLASHER

FIG. 1

W and WS—Section Beams; C and D—Carrier Rolls; A—Immersion Roller; G and H—Squeeze Rolls; E and F—Copper Rolls; B—Stand for Selvage.

When we first got this up, I was writing to a

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Loom Dandruff. Shedding from loom, highly magnified, showing flaking off caused by improper control.

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friend about it, and he couldn't understand the proposition. He asked me if, when a lease is laid in this way, and the immersion roller run down, the twisted selvage wouldn't be left slack, and also, when the immersion roller is wound off, why it wouldn't break the selvage. He asked me to step into the slasher room and raise the immersion roll and see what happened; that he couldn't see how a set could be started in this way. He said it had always been his experience that when the double and twisted selvages are on the beam and over the immersion roller, when a set is laid, and this roller lowered, the selvage slackens about a yard; and that on the other hand, when it is necessary to raise the roller, the selvage breaks. Then I told him that, as he requested, I stepped into the slasher room and put the slasher on slow speed preparatory to closing down for the night. I lifted the squeeze roller off of the large copper roller. Then I *raised* the immersion roller, *at the same time lowering* by hand the little stand carrying the twisted selvage—and the selvage didn't break! It wouldn't.

This man also said, JIM, that in lowering the immersion roller, the selvage slackened about a yard. Surely it does, and if it didn't it would be impossible to raise the stand by hand carrying the selvage up to hook it onto the hood, and by having this slack to raise up the hook, it is also there to let back down when the immersion roller is raised and prevents the selvage from breaking.

I think that by referring to the accompanying sketch, it will be evident that if the roller *A* is raised, if a man will at the same time take hold of the stand *B*, and *lower it*, that the selvage cannot break, but will come right on down until roller *A* is out of the size. The height of *B* is governed by the amount of yarn it takes to go over the carrier rolls *C* and *D*, under *A*, and up to the copper roller *E*. When *A* is lowered, *B* is raised by hand and vice versa. The selvage and body of the warp are separated as shown at *K*, which enables the slasher tender to keep the selvage in the comb better, and tell at a glance if a selvage end is broken.

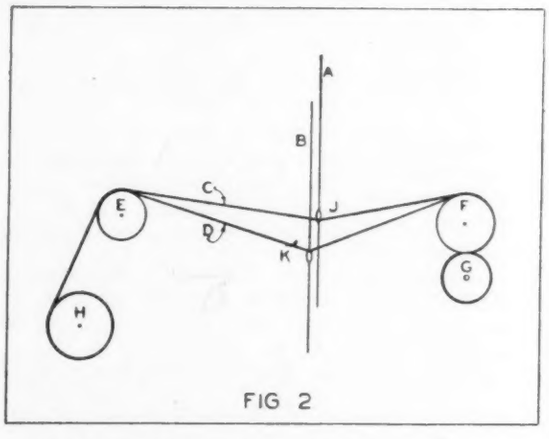

FIG 2

A—front harness; B—back harness; C—top shade of warp; D—bottom shade of warp; E—whip roll; F—sand roll or breast beam; G—woven cloth; H—loom beam; J and K—harness eyes.

Well, OLD-TIMER, *that is certainly a clear explanation of the idea and I am going to try it.*

JIM, do you always put an even number of ends in your plain warps? In drawing in a plain 2 harness warp, the drawing-in hand should always start drawing on the back harness and should end up or stop on the front harness. Then if the harness cams on your looms are set so the filling will be pulling on the bottom shade as it picks from the right-hand end it will also pull on the bottom shade when it is picking from the left-hand end. This will make a smoother selvage than if the filling were pulling against the top shade, because most all looms on plain weaves have the whip-roll and sand-roll or breast-beam set higher than the harness eyes are when the harness is level. Then, as the harnesses are opened for the shuttle to pass through, the bottom shade will be tight and the yarn in the top shade will be slack. (See Fig. 2.) The loom is set this way to put a better face on the cloth. So you see, if you should slash your warps with an odd number of ends, the back shade or the front shade would have the two outside threads of your warp in it, depending on the shade you started drawing on first. For example, if your warp had 3,121 ends in it, and if the girl started drawing the first thread in the back harness, she would be compelled to draw the last thread (on the other side of the warp) also in the back harness. Then, it matters not how you set your harness cams, one selvage would have the filling pulling on the top (or slack) shade and that selvage would not be as smooth or look as well as the other one. Therefore, be sure to have an even number of ends in your warper beams so that the slasher man in making up the set will always have an even number of ends in the warp. The number of ends in the aforementioned warp should have either 3,122 or 3,120 instead of 3,121 ends.

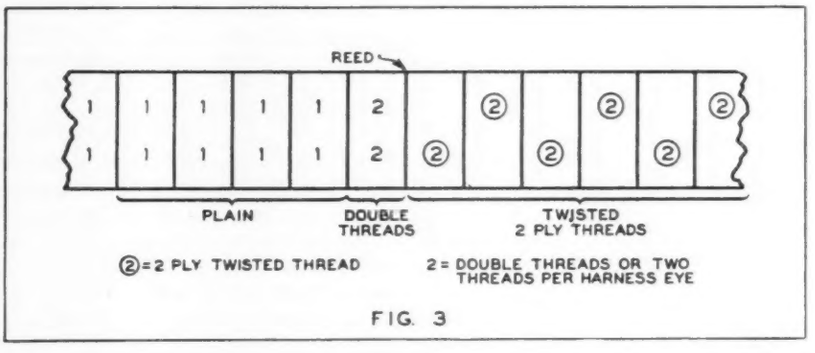
REED
1 1 1 1 1 2 ② ② ② ②
1 1 1 1 1 2 ② ② ② ②
PLAIN
DOUBLE THREADS
TWISTED 2 PLY THREADS
②=2 PLY TWISTED THREAD
2= DOUBLE THREADS OR TWO THREADS PER HARNESS EYE

FIG. 3

On high sley goods, 100 threads per inch and up, many mills run two-ply twisted threads for a part of the selvage, and if you want the selvage to run well and also look better, try drawing one twisted thread per dent, as shown in Fig. 3.

It is also necessary to have one or two dents of ordinary or regular ply threads, that is, two threads drawn in one harness eye, but not twisted, so that if you have an end to run out in the body of the warp you can borrow one of these ends from the selvage to replace it.

(*Continued from page 52.*)

can cotton results in serious economic loss through waste, damage to the badly packaged bales, and lack of uniformity in weight of tare.

American cotton has long been characterized as the poorest packaged commodity in world trade, and this fact, says the bureau, puts the cotton at an unnecessary disadvantage in competition with well-packaged cotton of foreign growth. Net-weight selling, the bureau believes, would provide an incentive to eliminate wasteful practices inherent in the present gross-weight system and reduce marketing costs.

A survey of cotton tare problems has convinced bureau officials, however, that "net-weight trading in cotton would be feasible only if accompanied by some positive provision for the standardization of bale covering materials, which would permit of ascertaining the net weight of a bale of cotton conveniently and without undue expense."

The Bureau regards as essential features of a tare standardization program the adoption of definite specifications as to dimensions, weights, and strength of bale covering materials including bagging ties, and patches. It believes that new and re-woven jute, sugar-bag cloth, and cotton could be standardized for bagging and patches within a reasonable range of tolerance as to weight and strength, and both steel bands and steel wire standardized for ties.

In a comprehensive report on cotton tare problems the bureau says that "under a system of net-weight trading and standardized tare, marketing agencies would no longer be able to exact a profit by adding patches to cotton bales, but would realize definite advantages in the way of freight savings, the simplification of trading practices and price calculations, elimination of risks associated with uncertainties as to weight of tare, possible savings in insurance, savings in customs duties in certain instances, and in the sales advantage of a neater package.

"Maufacturers using raw cotton would benefit from the proposed change," the report continues, "by the elimination of the present uncertainty as to exact cost of raw material which irregular weight of tare involves, and by the reduction in waste and damage that results under present conditions from the use of unsuitable bale covering materials. Economies in the marketing of cotton, accruing from the adoption of net-weight trading and standardized tare should, to a certain extent at least, be reflected back to growers in the way of increased prices"

Study of Textile Educational Needs

Under the auspices of The Textile Foundation, a study into the educational facilities and requirements of the textile industry will be made immediately by Frederick M. Feiker, formerly director of the Bureau of Foreign and Domestic Commerce. The purpose of the survey will be to offer recommendations for adjusting textile education to the needs of the industry. A committee appointed by the Foundation, and consisting of Dr. Karl T. Compton, president, Massachusetts Institute of Technology, Cambridge; E. C. Brooks, president, N. C. State College, Raleigh, N. C.; and Dr. R. E. Doherty, dean of the School of Engineering, Yale University, New Haven, Conn.; has made a preliminary survey —and the program was discussed in detail at a conference of the heads of all of the textile schools of this country in Washington, on Friday, June 16th. Dr. E. C. Brooks presided at the meeting, and the following textile school directors were present:

C. A. Jones, A. French Textile School, Georgia School of Technology, Atlanta, Ga.; E. Camp, textile department, Alabama Polytechnic Institute, Auburn, Ala.; H. H. Willis, textile department, Clemson College, S. C.; Carl D. Brandt, textile department, Texas Technological School, Lubbock, Texas; J. B. Bagley, textile department, Texas A. & M. College, College Station, Texas; J. H. Handford and William Smith, New Bedford (Mass.) Textile School; Thomas Nelson, textile department, N. C. State College, Raleigh, N. C.; Henry W. Nichols, Bradford-Durfee Textile School, Fall River, Mass.; Charles H. Eames, Lowell (Mass.) Textile School; and E. W. France, Philadelphia (Pa.) Textile School. Mr. Feiker and Edward T. Pickard, secretary of the Foundation, were also present.

Mr. Feiker plans to visit practically all of the textile schools immediately, and also spend some time in various textile manufacturing centers. It is proposed to have another meeting of the textile school representatives with Mr. Feiker in September to discuss definite programs.

The Textile Foundation, sponsor of the study, was organized in 1930 for economic and scientific research for the benefit of the textile industries and their allied branches, including the production of raw materials. Franklin W. Hobbs, chairman, Stuart W. Cramer, treasurer, Frank D. Cheney, of New York, and Secretary of Agriculture Henry A. Wallace, and Secretary of Commerce Daniel C. Roper, are the directors of the Foundation.

Obituary.

WILLIAM R. O'HARA, for many years connected with the textile industry of the South, passed away at his home in Charlotte, N. C., on Wednesday, May 25th. He is survived by Mrs. O'Hara and two children. Mr. O'Hara was 47 years of age, and had been associated with The Stafford Company, Saco-Lowell Shops, and others, and within recent years had been engaged in the yarn business. Burial was at Greenville, Ga.

WALTER L. HUSE, formerly treasurer at Laconia Needle Co., Laconia, N. H., and one of the partners in W. D. Huse & Sons, Laconia, N. H., passed away at his home in Laconia on May 30th after an illness of two years. He was in his 70th year and had been connected with the hosiery and underwear trades for 50 years, his father having perfected the Huse ribber and winder. He was general manager of the Laconia Needle Co., since its founding in 1907 until two years ago when the condition of his health forced him to retire from active management. The passing of Mr. Huse will not affect the policies of the Laconia Needle Co., it is announced.

GEORGE FISH, one of the pioneer cotton manufacturers of the country, passed away on May 15th at Tuxedo, N. C. Funeral services were held at Pawtucket, R. I., his former home.

J. E. HARDIN, 57, secretary and general manager of the Proximity Mfg. Company, Greensboro, N. C., and allied interests, and president of the Asheville (N. C.) Cotton Mills, passed away on Monday, June 26, as a result of injuries sustained in an automobile accident on June 16, in which HARRY DRIBBEN, of Cone Export & Commission Company, was instantly killed. Mr. Hardin had been connected with the Cone interests for more than 30 years.

SAMUEL T. BUCHANAN, 67, superintendent of Piedmont (S. C.) Mfg. Company for nearly 30 years, died recently following an extended illness. "Mr. Buch", as he was familiarly known to thousands, was one of the pioneer superintendents of the South.

M. R. MACOMSON, superintendent of the Saxon Mills, Spartanburg, S. C., passed away recently after an illness of several months. He too was a pioneer southern cotton manufacturer.

T. A. SIZEMORE, another of the pioneer group of southern mill men, who recently retired as superintendent of American Spinning Company, Greenville, S. C., died last month following a long period of ill health.

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

A Survey of Experience With Spraying Oil on Raw Cotton

By the Editor

RECENTLY we received the following request from the president of a group of southern mills:

"One of our superintendents, a close reader of COTTON, sends me this note:

" 'It would be of interest to us to have discussed in COTTON, under 'HOW OTHER MEN MANAGE', the following questions in regard to spraying oil into cotton:

1.—Is oil spraying on any length staple cotton worth what it costs?

2.—If so, is it as valuable on 1⅛-inch staple as on ⅞-inch staple?

3.—What is considered the correct amount to use on 1-inch Middling cotton?

4.—Will the yarn shed worse in the weaving process where the cotton has been sprayed with oil than where it has not?

5.—What advantages or benefits are derived from the use of the oil spray?

6.—On what staples do you use it?

"We will appreciate your co-operation in securing for us the opinions and experiences of mills using the oil spray."

The foregoing questions were submitted to a number of mills with varying experience with oil spraying on different lengths of cotton, in different type mills. This report is not intended to be conclusive or complete, but only to reflect the answers as given to these particular questions. A digest has been made of the answers received.

Summary of Answers.

Some of the men answering have installed one of the newer methods of application at the picker, others basing their statements on the original type of application at the hopper.

The superintendent of a very large mill answered as follows:

"1. We have not used oil on any staple longer than 1⅛-inch, but we have found it beneficial in the operations on all lengths up to and including 1⅛-inch . . . 2. We do not see as much benefit on the 1⅛-inch as on shorter cottons because there is not so much fly and not so much work to do in carding and spinning 1⅛-inch cotton as there is in ⅞-inch . . . 3. We have found 2/10 of 1 per cent or possibly a little less gives us the best results . . . 4. We have not found more shedding in weaving where the cotton is sprayed with oil. We have been trying out this oiling of cotton for several years, putting it in and taking it out, and we have come to this conclusion: That we have a cleaner card room, that we make a more uniformly round thread, and that our yarn number is not affected so much by atmospheric conditions . . . 5. We have less dust in the card room, the cotton works better, and gives us a smoother and a more even thread . . . 6. We use oil on all lengths from ⅞-inch to 1⅛-inch." (This mill uses one of the newer systems of application.)

The general manager of a colored goods mill replies, answering the questions in order: "(1) We have had experience only on ⅞-inch to 15/16-inch staple. (2) No answer possible. (3) We use ½ of 1 per cent. (4) We have found no additional shedding in the weave room, but should this occur it could easily be offset by the slashing formula. (5) We have found that our cleaning was just as good as before and that flyings and consequent sweepings were very much reduced. Particularly in dyed raw stock does the carding and spinning run materially better with the oil than without, and I think there is no question that the yarn will be stronger with this oil. In the short time we have used this oil (about two months) there seems to be an increase in the amount of goods obtained out of the cotton put in process of 2 to 3 per cent, and this I consider its greatest advantage. (6) See answer to Question No. 1." (This mill has one of the newer systems of application.)

The general superintendent of a group of mills replies that he considers oil spraying on any length of staple worth what it costs, but that it is more valuable on short than on long cotton, "because there is more fly in short cotton." He considers 3/10 to 5/10 of one per cent the correct amount to use on 1-inch Middling cotton, and states that in his experience the yarn does not shed worse in the weaving process when the cotton has been sprayed with oil. (This mill has one of the newer systems of application.)

The superintendent of a plain goods mill answers Question No. 1 affirmatively, and says, answering No. 2, that "the oil affects the running of the work on 1⅛-inch the same as it does on the ⅞-inch; it

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WE invite our readers to make use of this department for the discussion of any and all problems arising in the mill or finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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will be a little better on the 7/8-inch to keep down the short fly than it would be on the 1 1/8-inch." He uses 4/10 of 1 per cent. As to shedding, he says, "On warp yarn I do not think you will have any difficulty with shedding, due to the fact that the yarn has been slashed; but on filling, where the filling has been treated with oil, I do not think you will be bothered with kinky filling on oil-treated yarn as on untreated." His warp staple is 1 3/32-inch, and his filling staple, 15/16-inch to 1-inch. As to the benefits of spraying oil, he says, "First, I think the cotton cleans better by using the oil. Second, you do not have as much dust or fly on the card and fly frame where you use the oil as where you do not use it. Third, we see quite a difference in starting up on Monday morning in the spinning room where we use the oil and where we do not." (This mill has one of the newer systems of application.)

The general superintendent of another group of mills answers as follows:

"We have been using oil spraying for several years and the system which we use applies the oil in the opening machinery. Later developments of this process apply the oil at the finisher picker and have the advantage of being able to apply a higher percentage of oil. We have not experimented with this latter system and what I shall say applies only to the older method of oil spraying.

"We believe that the oil spraying is worth what it costs on cotton such as is ordinarily used for print cloths, sheetings, etc. Our reason for this statement is that we feel quite sure the oil is carried through into the cloth and replaces an equal amount of cotton which offsets the cost of the oil. The principal benefit to be derived is a cleaner card room with less dust and lint.

"We doubt that oil spraying would be as valuable on 1 1/8-inch cotton as on 7/8-inch cotton, although we have never had experience on the longer staple. Our reason for this opinion is because the lower grade and shorter cotton contains more dust and lint and, therefore, the oil necessarily is more effective.

"With the spray system which we use, we use from 1/4 to 4/10 of one per cent which is considered a practical amount of oil to use, however, I understand the latter systems can probably handle up to one per cent to advantage.

"I do not see any reason why the yarn should shed more in the weaving where the cotton has been sprayed with oil, and our experience does not indicate that it will shed more."

The superintendent of a group of fine yarn mills states, "I consider oil spraying on any length of cotton worth what it costs. * * * I have had experience on spraying oil on 1 1/8-inch staple but have not had experience on 7/8-inch staple. I consider it worth while on the 1 1/8-inch staple. * * * On the old style equipment I found it satisfactory to use up to 3/10 of 1 per cent. On the new style equipment I find it satisfactory to use up to 5/10 of 1 per cent. * * * I have had no experience in weaving yarn that had been sprayed with oil and am unable to give information in regard to shedding."

Causes of Button-Holes in the Selvage

Several weavers give here their ideas of this trouble on different fabrics. We have more on hand. Let us have yours . . . . . .

EDITOR COTTON:

Your "CONTRIBUTOR NO. 6163" brought up in your discussion department the question of what causes "button-holes" in the selvage of cloth. He said that one man had told him that it was "tender" filling, and that another man said that the only cause of "button-holes" is friction.

Believe me, this man has brought up a question that will surely bring out a lot of discussion. I have fixed this trouble at times, but really could not explain just what the remedy is. However, there is no doubt in my mind as to what the cause of it is.

Most of this particular trouble is caused by a heavy weave, one that takes all the loom has to get in the picks.

When a loom is running on goods of this kind, the contraction at the temples is such that the outside dents on the reed are pulled, and while on the outside, two or three dents are spread, it causes the next dents to be closed, and the threads cannot pass each other without forcing, thus acting like a pair of shears, cutting or partially cutting the filling, and if it is only partly cut, it will break on the pull of the temples.

The remedies are: First, be sure that the selvage is not too heavy, that is, if it is of two-ply yarn, do not have the two-ply any heavier; if 14s warp is used, use 28s/2; if 28s warp, use 50s/2 or 56s/2, and do not have the ends too many in one dent. Second—and this is a very good idea, and one that ought to be done whether it cures or not—have the reed soldered on both ends for about 8 inches. Third, have a bastard reed made with considerably more space between the dents, on about one inch of the selvage. The setting of the loom always plays a prominent part in all trouble of this kind, and one should try all different settings that a good weaver knows about. Be sure that the let-off works freely, and do not run the warp too tight.

There is no doubt that friction in the shuttle has a tendency to make holes in a weave of this kind, for one can very easily see that when the bobbin has run almost off there will be more holes. The reason for this is that if the filling is held tight, the warp threads that are in a closed dent can and will cut the filling easier. This is very hard to control, for if one is running an 8-inch bobbin, if there is no friction at all in the shuttle, there will be plenty just before the bobbin transfers (I am speaking of a Draper loom) so that it means running with just enough friction in the shuttle to keep from kinking the filling.

Now, let's hear from somebody else.

CONTRIBUTOR NO. 6219.

EDITOR COTTON:

This replies to "CONTRIBUTOR NO. 6163" who asks what causes "button-holes" in the selvage of cloth.

We do not have buttonholes in our selvages.

Tender filling or a light soft twist filling, or the

bobbin not being true in the shuttles, will cause button-hole selvages—all of these causing a strain on the filling and giving it a tendency to break at the selvage. To overcome this strain on our looms, we set the temples 3/16-inch off of the race plate, set the harness cam 2½ inches from the fell of the cloth with the shuttle in the battery end, set the pick cam ½ tooth before top center, set the whip roll vibrating cam so that it will release as the reed beats up.

Our experience with these settings is that they have eliminated button-holes in the selvages.

CONTRIBUTOR NO. 6228.

EDITOR COTTON:

In entering the discussion on the cause of "button-holes" in the selvage of cloth as it is woven on the loom, my opinion is based on 30 years of experience on making all kinds of cloth on different kinds of looms. As I start, let me say that I believe cotton mill men have the least of this kind of trouble, which was brought up on page 59 of your May issue by "CONTRIBUTOR NO. 6163". The worsted and rayon mill people are the ones who really have to fight this serious fault.

Let me come quickly to the point by saying that I am positive that "button-holes" are caused by only two things: a sharp loom reed or poor and bad templing, or both. Every weave room man knows what a sharp reed is, but what I mean by poor and bad templing is just this: If a piece of cloth is held by the temples and there is a loss of more than ⅛-inch on each side from the reed width to the width at the fell of the cloth, the templing is poor. If the loss is more than ¼-inch on each side, then it is templing bad.

To determine if the templing is excellent, good, poor or bad, do not depend upon the eye when it can be determined accurately by using a rule. Lay the rule on the ends in the reed to get the reed width, and mark off the center ends. Then lay the rule at the fell of the cloth and notice the loss in templing, also notice by the marked center ends if the loss is more on one side than the other. The "button-holes" are always on the side that has the greater loss.

If your contributor will check up and find the reed good, I feel very sure that the templing loss will be over ⅛-inch on each side. He can forget about the weak filling which he mentions, because this does not enter into it. I have had this trouble on the heaviest duck and on the finest balloon cloth. "Button-holes" are made at the fell of the cloth and here is where they must be finally corrected.

I suggest, when this trouble develops, look over the reed carefully. Be sure it is smooth by having it smoothed by a competent man. The causes of poor and bad templing are many and I can touch on only a few of the most important. It is essential that the proper temple be used, and, running within, are the correct temple burrs having the proper number and length of pins for the cloth being woven. See that left-hand temple burrs are not being used where right hand burrs should be used; that the pins incline outward and not inward; that the cover lies parallel to the burrs and the temple trough is parallel to the race board. If Dutcher reciprocating are used, they should never move over ¼-inch. See that the face of the temple be as close to the reed as possible as the lay strikes the temple leg; that the reciprocating movement is not coming through the temple thread cutter instead of the temple leg.

If the temple is found to be set properly, we will turn to the suggestions of one of the friends of your contributor, who was correct when he mentioned friction in the shuttle. It can be readily seen that any undue drag on the filling will make the cloth narrower at the fell of the cloth, and the reed, in trying to bring it out, will break the filling, and it is bound to break where it moves the most, and that is at the selvage. Let us understand this: when the lay strikes the fell of the cloth, the harnesses have closed and crossed on the pick of filling, and any extension of the pick of filling has to come from stretch and not through the shuttle eye. If this stretch is too much on account of poor or bad templing, caused by too much drag on the filling, "button-holes" will be the result. Therefore, we should see that the bobbin is neither too high or too low, or on either side; that the bobbin is not rough or splintered; that the eye is clear and smooth. "Button-holes" are generally caused as the filling is running from the bottom of the bobbin. We should do everything possible to equalize the tension, as the filling runs from the top to the bottom of the bobbin. Too long a bobbin may be run for the shuttle or the kind of cloth being made. There should be a good clearance between the end of the bobbin and the throat of the shuttle. Give the filling a chance to balloon around the end of the bobbin a little.

Assuming that the shuttle and bobbin also are in first-class condition, let us walk to the back of the loom and look over the work of the department where 95 per cent of all good cloth is made: *the slasher room.* Let us look at the edges of that warp. No wonder we are getting "button-holes" from poor templing. The man who slashed that warp should be making rolls for steam pipes to run on. The selvages are built too high on the beam and the selvages are going in loose and flabby. The selvages may have been run from selvage drums and run on the warp too loose. Where the cloth should be strong and firm so that the temples can have something to pull on and hold the cloth out, there is nothing but loose yarn and the temples lose their grip and the cloth shrinks at the fell of the cloth. We should be sure to have the slasher tender watch this point carefully. A light coil spring hooked over the selvage behind the warp stop motion will stop "button-holes" from this fault.

Now that the warps are coming right and we are still getting "button-holes", let us check up on the selvage construction. It should be ¼-inch wide, and the number of ends and the number of interlacings with the filling should be equal to the number of threads that can be laid side by side in ¼-inch for the average counts of warp and filling used. This is to make certain that the drag of the filling cannot pull the ends closer together or that they are not too close and thus burst the filling on the beat-up.

In closing, let me say that I know that many cloths will run and are running where the templing is what I term poor or bad without making "button-holes" in

the selvage; but I also know that many gallons of size are unnecessarily used on warp yarn and again washed out in the cloth; also, many reeds find their way to the scrap heap in their young days, all because of poor templing. The loom temple was one of the most important inventions in power loom cloth manufacture, yet, in my opinion, it is the least understood of anything with which weave-room men come in contact. Very few men know why or how they are constructed, and know very little more on how they do their work, their application and their care. "These men" include myself.

If your contributor does not find a remedy in what I have submitted here, and in what others will write, if he will say in COTTON what is the exact construction on which he is having trouble, giving the kind of loom, temple, length of bobbin and kind of shuttle he is using, I will try again to help him.

CONTRIBUTOR NO. 6246.

Cleaning Schedules in Spinning on 40s and 50s Combed Warp.

EDITOR COTTON:

In answer to the inquiry of "CONTRIBUTOR NO. 6201" who says, "I would like to see in 'HOW OTHER MEN MANAGE' some discussion by mill men on the subject of fanning out in the spinning room. We are running 40s and 50s combed warp. We fan out every hour, or nine times per day. The spinners are required to stop the frames on each side of the one being fanned and fan around the frame twice before starting it up.

"We find that we keep a very clean room with this system, but I would like to hear from other mills which do not fan out and some which do fan out; together with a discussion as to their experience as to the best system for cleaning a spinning room of this kind, going into detail as to methods, schedule, etc., in every particular with regard to spinning. In this connection I would be glad to have ideas and experiences as to whether there are more or less gouts on the fanning out system."

Herewith you will find two cleaning schedules laid out by two spinners, each of whom has had many years of experience. The schedules are for spinning rooms operating on relatively fine numbers—50s to 100s, combed yarn. The schedules have had a thorough trial.

These schedules will doubtless be considered too light by some of COTTON'S readers. There are overseers who require the help to run out the front sides every hour; wipe out the back sides every two hours; brush the spindle whirls every two hours; wipe the roving sticks two times each day; and clean other places much oftener than is outlined in these schedules. These schedules were gotten up with the idea of keeping the room clean enough to prevent the accumulation of lint from doing damage. At the same time they allow the spinners to run a maximum number of sides. They have been used in northern as well as southern mills.

Each of these spinners believes that the blowing-off method should never be used. They claim that the time lost, and the trouble made, by filling the air with lint when blowing off, does far more damage than it does good. Bits of dirty lint are bound to be picked up and deposited on the yarn, however much care is exercised in blowing-off. A portion of this dirty lint will eventually get into the cloth.

It is realized that there is some likelihood of getting wads of lint on the yarn when cleaning by wiping down, or brushing off with brushes. We believe, however, that there is much less harm done when cleaning by this method than is done when a general stirring of lint takes place as it does with a vigorous blowing-off.

In addition to the regular cleaning, many spinners advocate washing of the rails and rings one each six months. The method used is to get two long tanks and fill one with a solution of ammonia, and the other with hot water. The rings and rails are soaked for a few minutes in the ammonia solution, and then transferred to the hot water and rinsed well. They are then dried in sawdust. This frees them from the accumulation of oily or gummy matter and leaves them bright and clean.

While this thorough cleansing is not condemned, it is doubtful if many mill managers feel that they can afford to have the spinning gone over in this manner under present economic conditions. We are of the opinion that once in every two years is sufficient for this thorough cleansing. We know that good work can be gotten off with this lesser amount of scouring.

SPINNING CLEANING SCHEDULE

CLEAN ONCE EACH DAY.
Top creels
Bottom creels
Under guides
Top of roving
Roving rods.

CLEAN TWICE EACH DAY.
Back Guides

CLEAN THREE TIMES EACH DAY.
Top clearer boards

CLEAN RINGS EACH DOFF.

BRUSH RING RAIL AND SIDES FOUR TIMES EACH DAY.

CLEAN ONCE EACH WEEK.
Back spindles
Between spindles.
Spindle cases.
Under clearers (oftener when needed)
Roller stands.
Top rolls.
Steel rolls.
Heads and ends.
Roller clearers (Top).

SPINNING ROOM

CLEANING BY SPINNERS:

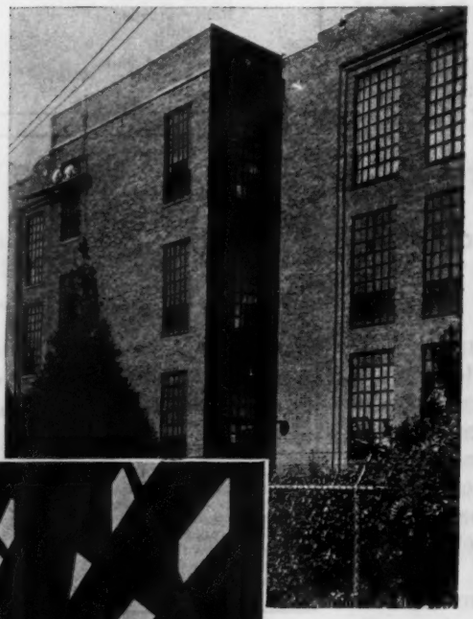
MONDAY:	Wipe down noon and night; pass board four times; pick top clearers twice; clean one-half of top rolls and steel rolls.
TUESDAY:	Wipe down twice; pass board four times; pick top clearers twice; clean one-half of top rolls and steel rolls
WEDNESDAY:	Wipe down twice; pass board four times; pick top clearers twice; clean top creels and rails.
THURSDAY:	Wipe down twice; pass board four times; pick top clearers twice; clean bottom creels.
FRIDAY:	Wipe down twice; pass board four times; clean top creels; clean rails and stands and front rolls; pick top clearers twice.
SATURDAY:	Wipe down once; pass board two times; pick top clearers once; finish front and steel rails.

CLEANING BY OTHERS:
Clean humidifier heads on Fridays.
Clean head and front ends every noon hour.
Sweep six times daily—hook out from under the frames on last noon and night sweep.
Clean top of creels on Friday and Saturday.
Clean ceilings at noon Tuesday, Thursday and Friday
Brush windows every day.

AGAIN SHERWIN-WILLIAMS PROVES MOST

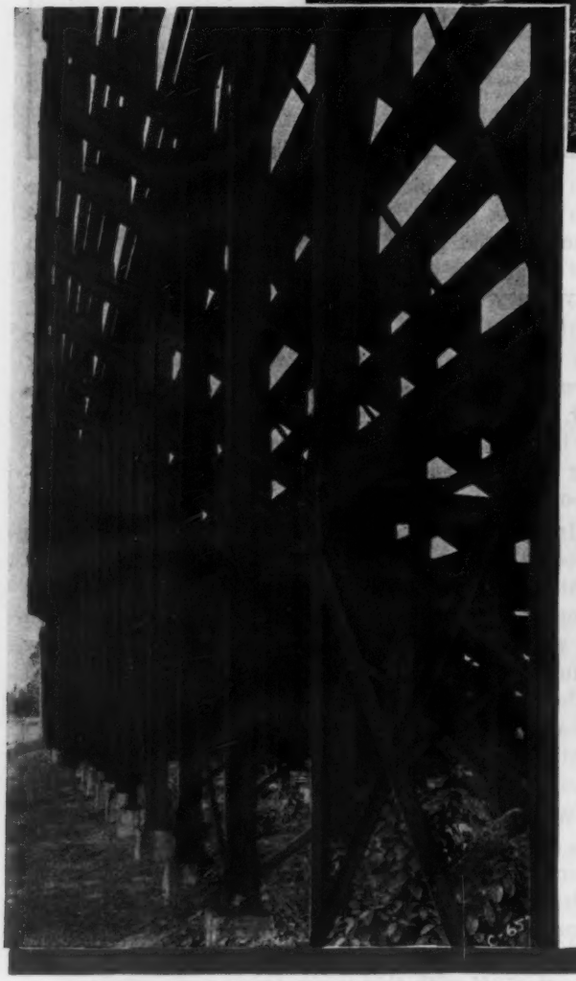
KROMIK PROTECTS STADIUM 4 YEARS

Wooford College Stadium, Spartanburg, S. C.: *Kromik Metal Primer applied to this structural steel work over inexpensive oxide in 1929. Due to curtailment in funds, no finishing coat was applied—but even without the finishing coat, Kromik has protected this steel perfectly for 4 years. It shows no signs of "breaking down" even today.*



S-W KROMIK Metal Primer

1. Costs less per gallon than red lead.
2. Costs less to apply—covers more surface.
3. Makes steel and iron passive, minimizing electrolysis and corrosion.
4. Not affected by sulphurous fumes.
5. Produces water-tight and gas-tight film with much the same protective value as chromium plating.
6. Covers 600-700 square feet per gallon on flat surfaces. Can be brushed or sprayed.
7. Gives finest and most economical protection possible when followed by finishing coat of Metalastic.



KROMIK-PRIMED METAL WINDOW SASHES

Arcadia Mill No. 2, Arcadia, S. C.: *Metal window sashes being primed with S-W Kromik. In this case, Kromik was followed by a finishing coat of Aluminum Paint.*

KROMIK-PROTECTED STACKS AND FLUME

Tucapau Mills Power Plant, Berry Shoals, S. C.: *S-W Kromik Metal Primer was used on this big flume on both stacks and the cross pipe (near top of building in lower part of photograph).*

WILLIAMS QUALITY ECONOMICAL IN USE

S-W Kromik Metal Primer demonstrates its higher protective value and lower cost on these textile mill property surfaces . . .

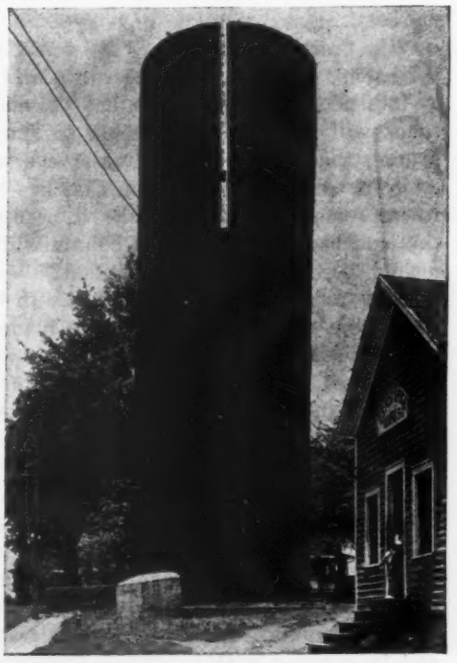
● **These photographs tell their own story. Sherwin-Williams Kromik Metal Primer, for years recognized as the "old reliable" on structural steel for bridges and buildings, is now demonstrating its *higher protective* value and *lower cost* to the textile industry.**

S-W Kromik Metal Primer not only *costs less per gallon* than standard red lead primers—it also *covers more surface* per gallon and *requires fewer labor hours to apply*. Its use tends to render iron and steel passive—thereby reducing electrolysis and corrosion to the minimum. When followed by a finishing coat of Sherwin-Williams Metalastic, it gives the most effective and most economical protection to metal surfaces possible to obtain.

Your inquiry requesting specific information and cost figures entails no obligation. The Sherwin-Williams Co., Cleveland, O.

TEXTILE OFFICES: Philadelphia Charlotte Spartanburg Atlanta Nashville Newark, N. J. Boston, Mass.

Warehouse connections at all offices carry stock for prompt service to textile trade.



KROMIK-PROTECTED STANDPIPE

Tucapau Mills, Tucapau, S. C.: ***One coat of Kromik Metal Primer does an excellent and economical job on this big standpipe.***

KROMIK-FINISHED FLUME

Tucapau Mills, Tucapau, S. C.: ***500-foot flume protected with S-W Kromik Metal Primer. The diameter of this flume is about 8 feet.***

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

It is a good plan to have a thorough cleaning schedule and a very clean room. It is impossible, however, for a spinner to tend from twelve to eighteen sides and spend most of her time cleaning. We advocate a happy medium which will allow the spinner to keep her ends up and at the same time turn out clean yarn.

CONTRIBUTOR No. 6203.

Methods for the Operation of Fly Frames

EDITOR COTTON:

In the March issue "J. R. (GA.)" asks some practical questions, which, to answer, require a certain amount of practical knowledge as well as initiative in dealing with individual jobs in the card room. Circumstances peculiar to each individual mill will govern the answers to the questions to some little extent, but as far as I can, I will give positive answers to his questions. The results and the methods I shall give have been found after years of card room management to be the best.

His first question was, "Do you think wrapping the roving on the flyer presser two and a half wraps is indispensable? A wrapping of one and a half times will allow a small bobbin to run, and by just placing the roving in the presser eye will make possible the running of a bobbin that has had a layer of rovng removed, and not make it necessary to break this end back, however, this bobbin will be soft when doffed. Is this practice justified?"

This practice is never justified. In the first place, the bobbin of soft roving has been made with improper tension on it and it will not run as well as the rest of that set in the next process; then too, roving made in this manner is more likely to tangle and slip off of the bobbin. My principal reason for not permitting this practice is as follows: After the end has come down and the roving wrapped one and a half times or one-half around the presser finger as the case may require, the frame is doffed. In winding down the ends preparatory to starting another set, the frame tender will leave this particular end wrapped around the presser as it is. When the frame is started up, this end is running with too much tension and therefore the roving is stretched throughout the set. If this practice is permitted, there will after a very little while be found a dozen or more bobbins on each frame that are just wrapped one and a half or one-half around the presser. A tension gear cannot be found that will make the frame run right. Some ends will be too tight, others too slack. As a consequence the roving will be stretched and uneven, making a very inferior yarn.

"Should other operatives except the frame tender be allowed to repair breaks on fly frames?" was the next question.

Only the frame tender, the section man or the spare hand (if a spare hand is employed around the frames) should be permitted to piece up ends or set in roving in the creels. These operatives are held responsible for the quality of the roving made. They alone have been properly instructed as to how to do this work. Other operatives should have enough work of their own to do without attempting to assist the frame tender.

This man next asks whether dyed cotton always requires more twist in roving than white cotton. I have found from my own experience that dyed cotton requires from one to two teeth more twist in the roving than white cotton of the same grade and staple. The dyeing process removes the natural oil from the cotton fiber and also reduces the number of convolutions of the fiber, necessitating more twist.

The fourth question was, "Should a section man do his own oiling, or should his job be increased and an oiler put on to do this work?"

This question requires some study of the particular job in question. If the section man has a small section and has ample time, by all means let him do his own oiling. If his section consists of 20 or more frames, a thoroughly reliable man should be put on as oiler. Fly frames on colored roving require much more attention from the section man than frames on white roving, as they are continually being changed from one color to another.

"Is it best for each frame hand to mark his own roving or should a roving marker do this work?" was the next question.

The frame hand should never be allowed to mark roving. If any roving is unmarked, no one can tell by whom the roving was made or who failed to mark it. If a frame tender knows that he has made some roving of inferior quality, then he could leave the roving unmarked and no one would know upon whom to place the blame. Have one person responsible for marking the roving and it will be an easy matter to fix the blame if the roving is unmarked.

In the case of a portion of a section running,, and the section man doing the other work, such as sweeping, laying up roving, etc., should the section man's wages be cut, or should he be paid his regular rating regardless of the work he does, was next asked.

As long as the section man is responsible for the part of the section that is running, and he is doing other work as well, his wages should not be cut. If half of the card room is running, should the overseer's rates be cut?

While the writer is on the subject of jobs, and handling operatives, he would like to make a few more observations along these lines. The cleaner the machinery and floor are kept, the better the operatives will like their work and the better quality work will be made. See that cuspidors, water fountains and toilets present as sanitary and attractive appearance as possible. Keep all boxes well painted. I have found that if all roving boxes are painted white on the inside and made with a lattice bottom, the roving will be much freer from oil spots and dirt. This also keeps boxes from splintering up so bad. Give each operative a full job and then see that he carries it out in the right manner. Do not allow "ganging up". Permit no shouting, loud laughing or "horse-play". Your job will require less supervision, and after the system is installed the operatives as well as everyone connected with the job will be much better satisfied—a higher quality product will be produced. That is real economy.

CONTRIBUTOR No. 6243.

Comparing the Strength of Yarn From Back and Front Fly Frame Bobbins.

EDITOR COTTON:

Back several years ago you published in the "HOW OTHER MEN MANAGE" department a very interesting discussion on the matter of the strength of yarn made from back and front fly frame bobbins. At the time I anticipated that there would be quite an extended discussion on this, but there wasn't.

In checking over some filed clippings from your magazine I came across this particular article and have made recently some tests of my own. I should like to bring it up again, and in doing so, can do no better than to quote freely from the letter of "D. W. (N. C.)" which appeared on page 153 of the December 1927 issue of COTTON, as follows:

"There are a great many malpractices in the manufacture of yarn which are so old that many of us are given to accept them with a resigning shrug of the shoulders. For the sake of production, and good production is certainly required for profits, we push our stock through process after process at speeds which cannot make even, strong yarns. The unevenness we hope to hide by doubling, so that the thick and thin places will fall together and the resulting average be acceptable. It is this willingness to accept the average, to be guided by the general result and not the particular, that, to my mind, has done so much to hold back the improvement so needed in cotton yarn manufacture.

"The process to which I wish to direct attention is the fly frame. The particular feature about the fly frame which I believe causes so much of our trouble has no doubt been noticed by mill men many times. For this reason it is mentioned with hesitancy now, but it is mentioned because the writer has never seen the subject treated and because he sincerely believes it causes trouble.

"Spinning frame rolls are set at an angle to the horizontal so that the twist will go right up to the bite of the front rolls, thus preventing stretching of the drafted roving as it comes from the rolls. Fly frame rolls, on the other hand, are run horizontally on the frame, so that the drafted roving must traverse a part of the arc of the bottom front roll before it receives any twist. The same tension must exist at this point as elsewhere from the top of the flyer to the rolls; if there is any reason this is not true, it is not perceptible to the writer at this time.

"Due to the fact that there are two rows of spindles on the fly frame the roving leaves the rolls at different angles. The roving which is delivered to the back row makes a greater angle than that going to the front, and consequently must traverse a greater distance on the front roll before any twist is imparted to it. This, therefore, gives us the opportunity of testing the roving which has undergone the stretching to a difference of degree, the front receiving the twist nearer the bite of the rolls and being stretched less.

"The following figures represent the test of thirty bobbins of 40s single yarn, one set being run entirely from roving taken from the back row of a fly frame and the other from the front row. The roving bobbins were taken from one doff of a fly frame and were consequently run side by side through the same rolls, from the same stock, etc. The roving is 7.7-hank, the draft on the spinning 10.5. Length of cotton, 1⅛-inch.

BOBBINS FROM FRONT ROW ROVING				BOBBINS FROM BACK ROW ROVING			
Weight	Break	Weight	Break	Weight	Break	Weight	Break
25	47	23 5	40	24.5	46	24.5	40
25.5	52	23.5	42	24	45	24.5	41
24.5	47	24.5	46	24	42	24	39
25	47	24	44	24.5	42	23.5	39
24.5	43	24.5	40	24	42	25	45
25.5	51	25	46	24.5	38	23.5	38
24	45	24.5	43	25.5	50	24.5	45
25	47			25	45		
Avg. wt. 24.57		Avg. Break 45.3		Avg. wt. 24.37		Avg. Break 42.5	

"The finer the work the greater, it seems to me, the difference would be. Someone may say that the back row of ends runs tighter than the front, but this is only further argument that the roving should be twisted at the bite of the rolls. The front line has greater length over which its tension is distributed, and has not as great an angle at the rolls.

"The only way to establish the truth or falsity of this contention is by a series of tests and a record of these will be appreciated.

"Also, the writer has never been able to get a uniform tension throughout the doff. Immediately after doffing the ends are too tight, gradually getting the proper tension after several layers have been run on the bobbin. Setting of the cone belt at different places on the cone when starting up on the empty bobbin and changing of tension gears to make up for the difference has not produced the desired result. Does everyone have this trouble and are we accepting it and making the best of it we can, or am I in a class by myself? If the former be true a great deal of experimenting in cotton yarn manufacture should be done and some changes made; if the latter, will someone have the kindness to advise me?"

I think the foregoing brings up a very interesting subject, and, as I said, I conducted some experiments recently along the same line.

In his article, "D. W." said that he could not get an even tension throughout the doff. I should like to say that we have no trouble with tensions from start to finish. Furthermore, we have an instrument which shows the amount of stretch in our roving, and we follow this up very carefully, but we have not been able to get as even a roving from the back line.

BOBBINS FROM FRONT ROW ROVING, FOR 40s/1				BOBBINS FROM BACK ROW ROVING, 40s/1			
Count	Break	Count	Break	Count	Break	Count	Break
41.75	74	41.50	73	42	71	41	69
43	68	41	73	41.50	70	40.50	74
40.50	75	40.50	75	41.50	68.50	40.80	72
41.25	73	43	69	41	74	41	68
41	73.50	40.50	73	41.10	69.50	42	71
41.50	71	41.25	73	41.40	73	41.50	68
40	75	40.80	75	42	68	41.50	69.50
41	68	41.75	72	41.75	73	42	68
Average Count, 41.28s Average Break, 72.53				Average Count, 41.41s Average Break, 70.40			

BOBBINS FROM FRONT ROW ROVING, FOR 110s/1				BOBBINS FROM BACK ROW ROVING, FOR 110s/1			
Count	Break	Count	Break	Count	Break	Count	Break
109	19.50	109	19.50	108	18	108	19.50
108	21.50	107.5	21	108	18.50	109	19
111	18.50	108	21	109	19.50	112	18
112	18	108	20	112	19.50	110	18
113	18.50	109	19.50	110	18	108	20
111	18.50	111	18.50	108	19.50	111	18.50
108	21	108	21	112	19.50	109	18
107.5	19.50	107.5	20.50	110	19.50	112	18
Average Count, 109.22s Average Break, 19.78				Average Count, 109.75s Average Break, 18.93			

The above test figures are typical of a series of

32 breaks on three different hank rovings, on counts of 40s/1 and 110s/1, over a period of weeks, in order to record breaks from full to almost empty roving bobbins. The relative humidity was 55 per cent; the temperature 76 degrees. Our frames are run 25 per cent under standard speed, with a very low twist multiple, with tensions as slack as can be run without coming out.

My own test figures just presented seem to confirm the ones submitted by "D. W. (N. C.)". I would be very much interested if other mill men would look into this and let us have in "How Other Men Manage" their ideas and experiences.

L. S. (N. C.)

Suggestions on Making Ends Down Tests.

Editor Cotton:

I suppose that practically every up-to-date spinner nowadays keeps a regular check on the ends down in his room, as a barometer of how his work is running and how the production is affected by stopped spindles—as well as a basis for figuring the size of the spinners' jobs.

In connection with this work I should like to offer some few suggestions that may be of value.

Some spinner may wonder sometime as to just what territory and length of time an ends down test should cover in order to reflect the actual conditions throughout the room. It is my experience, on numbers in the print cloth range, that a fair average will be secured by taking the ends down on four frames, over a period of four hours. Of course, the ends down from the start of the bobbin to the time for doffing will vary, so it would not be representative to follow a doffer down a line of frames, because if you did you would get all of your tests at about the same place on the bobbin. I therefore cross the paths of the doffers; that is, instead of going down a line of frames behind a doffer, I go crosswise and thus find some frames just starting, some about half full, and some about full. I believe this gives a good cross-section of the running of the room.

I think that such a test should be made with regularity and accuracy, and the records kept all of the time. However, I have another means of checking up on the spinning room ends down which is mighty good for all practical purposes. At some time during the day, I start in at one end of the spinning room, carrying a hand counter or tally. I note the time that I start, and go down every alley and every time I see an end down I register it on the hand counter. When I have traversed the entire room, I note the time it has taken me, and with the elapsed time, the number of ends down, and the number of spindles, I reduce it to a matter of ends down per thousand spindle hours. I have checked this time and again and find that the figure secured in this way will pretty closely approximate that shown by the test as I have just described it for four frames over a four-hour period.

I have one other thought to suggest in connection with ends down. Sometimes a spinner will find one particular spindle or end which is causing him more than its proportionate share of ends down. I have seen tests made where the end would come down immediately after the spinner had put it up again, and this would be counted as another end down, and this same end might come down five or six times during the period of the test, which would throw the average figure greatly out of line. It is a good idea to observe each spindle or end, and when one persists in coming down, to examine the rolls, and the roving, and see whether the spindle is wobbly or if there is some other condition which is causing that particular end to come down repeatedly.

Contributor No. 6251.

Some Carders' Ideas on Card Settings

Particularly with regard to setting the flats. Let us know if you disagree . . . . . .

Editor Cotton:

I note in the January issue that "Contributor No. 6172" wishes some discussion of his card settings. He said he is using 1 1/16-inch Low Middling cotton, making a 55-grain card sliver, with cylinder speed 165 r.p.m., licker-in speed 428 r.p.m., and doffer speed 11.5 r.p.m. From all signs he must be doing about 135 pounds in 10 hours per card. The settings he gives are as follows:

Feed plate to licker-in, 7
Licker-in to cylinder, 10
Back plate to cylinder, 29
Mote knives to licker-in, top, 12
Mote knives to licker-in, bottom, 10
Back screen to cylinder, 22
Middle screen to cylinder, 34
Front screen to cylinder, 5/16-inch
Doffer to cylinder, 7;
Flats to cylinder, 10, except the front stand, which he sets to a 17.

He wants us to comment on and criticize these settings. All right! The first thing I want to say is that it seems he is setting the feed plate a little close to the licker-in. I would change this from a 7 to a 10. I believe that for 1 1/16-inch cotton, his 7 is a little bit close, although I must admit that I do not feel that there is a great possibility of the staple being damaged by the licker-in, as the licker-in action is only a combing process; however, too close a setting might cause a little twist, more or less, to form on the fibers on the underside of the lap as it is being taken off of the feed plate by the licker-in. I feel that a 10 setting here would eliminate the likelihood of this twisting on the fibers underneath.

Now, let's consider the setting of the licker-in to the cylinder, where he uses a 10. I would recommend a 7 gauge here, for the simple reason that a licker-in that is set a little off from the cylinder will oftentimes—if it is not highly polished—carry some of the fibers back over and throw them through the mote knives or licker-in screen.

His setting of a 29 for the back plate to cylinder is, to my mind, just a little off. I consider that a 22 gauge is far enough off to set this plate at the bottom, which I suppose this contributor is talking about. A 29 gauge would not be too far off for the top of this plate to the cylinder, but I think it is entirely too far off for the bottom. My reason for having a little closer setting on the bottom of the back plate is that it acts on the fibers in a combing or mote-knife fashion. Many motes are thrown out through the mote

knives and are separated from the fiber of the cotton as the licker-in kicks the cotton to the cylinder and against the bottom of this plate; trash no doubt knocked out of the cotton falling on the licker-in goes back and is dropped at the mote knife; and for this reason I would set this plate a little closer than a 29 gauge.

As for the mote knives, I heartily endorse his setting of the top knife to a 12 and the bottom knife to a 10. I wish to mention right here that there is something to be lost or gained in the manner of cleaning cotton at this point, by having or not having the angle of the mote knives as they should be. A mote knife should be pitched just a bit toward the licker-in screen so as to have plenty of space between the nose of the feed plate and top knife. When the top knife is set at a reasonable distance from the feed plate, it seemingly gives the licker-in a better chance and more power to throw the cotton against the top knife, which in turn will cause more sand, trash, and mote droppage. I am sorry to say, but it is a truth, that some people set the mote knives so close to the licker-in that when a large mote is dragged against the top knife you can hear the knife touch a bit, and after many years of setting mote knives to licker-in as close as possible without touching, I have noticed the mote knives have a saw-blade edge on them and the licker-in is very dull on account of being set too close to the mote knives.

Setting the back screen to the cylinder at 22 seems very good, but is what I consider off just a bit. I would suggest that here the screen be set to a 17 gauge, as I feel this might help to reduce a little of the excessive draft that might be caused by the cylinder. "CONTRIBUTOR NO. 6172" is probably setting this screen off at the back to keep from endangering it about getting into the cylinder. I would like to say that 95 per cent of the back screens that are forced into and to rub the cylinder result because of the card tender allowing the laps to run through and the ends to be jerked in by the licker-in and forced through this very narrow space between the back screen and the licker-in. A very good way to overcome this is to place in the hands of each card grinder a board carrying the names of all of his card hands; and when a lap is allowed to run through the name of the tender who permitted it is marked for it. No doubt it would surprise many overseers of carding to know just how many laps are allowed to go through, jerk in and cause damage to the screen, cylinder and flats. This can be almost entirely overcome with a little system around the cards.

His setting the middle screen to cylinder at 34 is pretty good, and I would not suggest any change there; also 5/16-inch for the front screen to cylinder is not bad on low grade cotton.

In connection with the setting and care of screens, I wish to say that too little importance is placed on keeping the screen clean and in good mechanical condition. If any carder is having trouble in the way of his draft not being properly condensed underneath and around the entire cylinder, I suggest the setting and inspecting of all screens at least four times a year. In case of an accident at any time, I would have the screens removed from underneath the cylinder and in-

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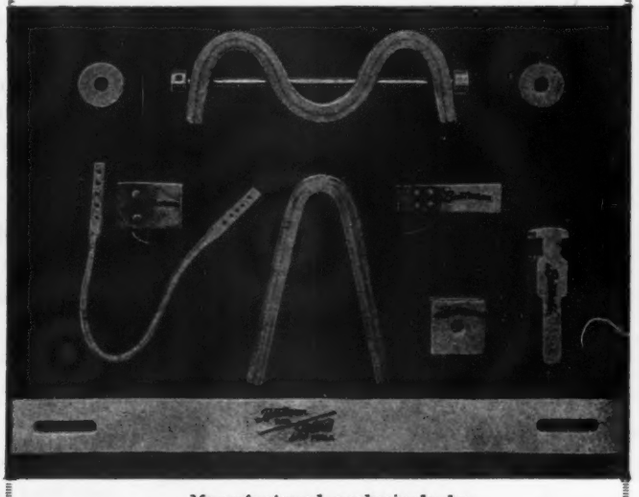

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He sets his doffer to the cylinder to a 7 gauge. Oh, well, a 7 gauge is not quite as far off as a 10 would be, but any carder whose cards are in good condition, should be able to move the doffer up to the cylinder to a 5 gauge. I contend that much good carding is damaged right here on account of the doffer being set too far away from the cylinder; a doffer that is set off from the cylinder to a medium 7 gauge will not keep the cylinder as clean and in as good condition for carding purposes as one set to a 5 gauge, and it is utterly impossible to do good carding with a loaded cylinder not being stripped properly by the doffer. Oftentimes I have seen very wooly looking card web come from the doffer, made bad and made to look bad because of the doffer not being set properly to the cylinder, with the result that the cylinder was just rolling the fibers off of itself onto the doffer. I would suggest that the doffer be set just as close to the cylinder as possible without rubbing the cylinder in operation.

Now, about setting the flats to the cylinder. This man says he sets to a 10, except the front stand, which he sets to a 17. This is just the opposite to what we have been taught to do, and the majority of us have pretty well practiced our teaching. I agree that many of us have to set the front stand to a 17 gauge because we are forced to do so on account of the flat chains and sprockets being worn to the extent that the flats will not match the sprockets and bag off the pulley to such an extent that the flats will drag the stripping plates. My contention, after experimenting with this thing of flat setting, is that if we could set our flats closer than a 17 on the front stand we would get a much smoother and evener web from the cards. One argument which the contributor advances concerning setting the front stand to a 17 gauge is that the flats gradually load from the back. I have been wishing for many years that I could go through a card while in operation. I have seen many men who have undertaken this lose fingers, hands, or arms, and therefore I have not tried it; but I would like to see the operation of the flats and cylinders on the stock as it passes from the back plate to the doffer. The theory for years has been that a progressive setting on the top flats was much better than a straight setting. For years most of us had in our picker rooms 4 and 5 beaters; those who had 5 beaters thought of the 5 stands on the card being set so as to do a little closer carding at the front than at the back, and I heartily agree with this progressive setting from the back stand, going a little closer as we get toward the front, for very clean cotton which is expected to produce high grade yarn or cloth.

But on low grade cotton, such as "CONTRIBUTOR No. 6172" is using, I will agree that the front stand on a 17 gauge and the other four set to a 10, is not so bad as some might think. I agree with him that much of the heavy impurities in the cotton that is carried to the cylinder is actually deposited on the first few flats at the back of the cylinder, and we cannot tell, but the opinion and idea is that these impurities are held by the flats on which they are first deposited. Therefore, as the flat does more or less

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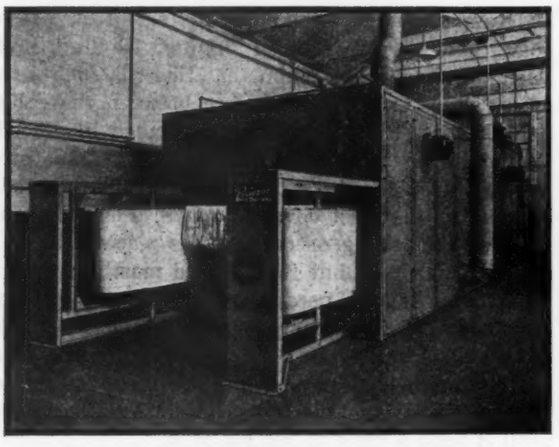

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load with these impurities, as they close the cylinder, it looks to me that it would be a good idea to get the flats away from the cylinder as early as possible; that setting the front stand off to a 17 gauge would lessen the chances of these impurities getting back to the cylinder, by one-fifth, that is, as this front stand is set off to a 17 the cylinder is not likely to reach up and get any of the impurities deposited on these flats while passing over the 10 gauge settings. But then, your contributor will have to acknowledge that he has cut down his card capacity one-fifth or 20 per cent.

He mentions also the stock rolling. I used to hear some of our good brethren singing, "Rolling, Rolling Along." I agree with him that there is such a thing as a rolling effect taking place between the cylinder and the flats, but there is not so much likelihood of rolling if the cylinder and flat wire have the proper knee and bend, as the card clothing people recommend, and the top flats set down to a 7, 8, 9 or a 10 gauge. Most of the rolling on cards takes place between the cylinder and flats, but it is caused mostly by the cylinder being loaded, needing stripping, and sometimes on account of the doffer being set too far off which causes the loading also; or else the rolling is caused by the flats being set too far away from the cylinder, the draft just bumping the cotton and rolling it along until it finds a place to get rid of it.

I believe the contributor will find that a lot of the improvement which he thinks comes from setting to a 17 gauge, is really brought about as a result of the increased space which this gives between the strip-off plates and the cylinder. When the strip plate is set very close to the cylinder there is a vacuum created at this point which has a tendency to suck from the flats the foreign matter deposited on the flats at the back of the card. Setting the flats to a 17 gauge and adjusting the stripper plates to give the proper amount of strips, widens this space between the cylinder and plate which did lessen the vacuum, with a tendency to help the flats retain the foreign matter deposited on them at the back of the cards. This plate has a peculiar action on the strips and foreign matter in the cotton. We notice that the closer this plate is set to the flats, the more strips we take out, but this is not always the best because we have to admit that the more strips we take out, the more good cotton comes out also. I suggest that from a 15- to a 20-grain strip is plenty heavy for a 40-inch card. In comparing a 20-grain flat strip with a 35-grain flat strip, we find in the lighter strip more foreign matter than there is in the 35-grain strip, so there is a limit to taking out strips; the stripper plates should be set so as not to overload the flats with good cotton. If it is set to allow the flats to load with good cotton, there is less likelihood of getting the amount of foreign matter as if the plate was set only to take out just a medium strip in weight.

A very good rule is to take a pair of grain scales or roving scales and place them on a doff box and go up and down the alley in front of the cards, taking the stripper rolls down and allowing a few flats to come over, and pull from these flats the strips and weigh at least three of them off of each card for a number of times just to see how the strips of each card compare in weight with each other. Where they show extremely heavy, close the plate to the cylinder just a bit; where they are extremely light, raise the plates just a little bit closer to the top flats. This will give as nearly as possible a rule to go by, showing the amount of strips taken out at the front of each card.

If I were "CONTRIBUTOR No. 6172", with 1 1/16-inch Low Middling cotton, doing 135 pounds per card per 10 hours, I would try these settings and compare the results:

Feed plate to licker-in, 10
Licker-in to cylinder, 7
Top mote knife, 12
Bottom mote knife, 10
Licker-in screen, ¼-inch
Cylinder screen, 17
Back plate bottom, 22
Back plate top, 29
Bottom screen middle, 34
Bottom screen front, ¼-inch
Doffer, 5
Doffer comb, 12 (comb speed being about 1,350 r.p.m. of comb pulley)
Flat setting:
Back stand, 11
Second stand, 10
Third stand, 10
Fourth stand, 10,
Fifth stand, 9; and adjust stripper plate to obtain about a 15 or 20-grain strip per flat.

CONTRIBUTOR No. 6173.

EDITOR COTTON:

In regard to the question of "CONTRIBUTOR No. 6172", I would say that in order to give a true answer one should know the weight of lap run, the card draft, and the setting of the stripping plate. But as he has not stated these, I would give a few suggestions as to what I consider to be improvements in his settings.

It may be that this man is making a heavy lap, with a short card draft. If so, I would suggest a draft of at least 110, as from experience this has proven to give best results.

I also note "CONTRIBUTOR No. 6172" has what I would call a strange setting for the flats. There may be a reason for this, and one reason may be that his flat chains are worn so that a close setting would cause them to strike the plate. Another thing, the wire on the flats may be hooked due to poor grinding; if this is the case, the only remedy is new clothing.

If "CONTRIBUTOR No. 6172" tried speeding up his flats he might get better results.

Looking over his settings, I find I would make a few changes, but one cannot use a standard setting, that is, if at one mill good results are obtained from certain settings, the same settings at another mill might not prove adaptable. The only thing to do is to experiment with different settings until the ones that prove most satisfactory are found.

I will list the settings given by "CONTRIBUTOR No. 6172" and put opposite the ones I think are better:

	His Setting	My Setting
Feed plate to licker-in	7	12
Licker-in to cylinder	10	10
Back plate to cylinder	29	29
Mote knife to licker-in, top	12	10
Mote knife to licker-in, bottom	10	7
Back screen to cylinder	22	34
Middle screen to cylinder	34	34
Front screen to cylinder	5/16"	¼"
Doffer to cylinder	7	7
Flats	10	10
Flats, front	17	10
Stripping plate, top	?	22
Stripping plate, bottom	?	34

CONTRIBUTOR No. 6174.

Answers Card to Room Questions.

EDITOR COTTON:

I would like to answer the card room questions submitted by "J. R. (GA.)" on page 58 of the March issue of COTTON.

"1. Do you think wrapping the roving on the flyer presser 2½ wraps is indispensable?"

The wrapping of 2½ wraps of the roving on the flyer presser should be done, rather than produce a soft bobbin for the spinning department to handle, as carelessness of handling would result in waste, and a bobbin of a soft nature is regarded with suspicion in the spinning room. I should say that a few bobbin pieces should be kept and tried where it is necessary to substitute for a bobbin that has a few layers off, thus affecting the tension on that particular end at the speeder. If it will not run, the end should be broken back at the speeder rather than passing a soft bobbin to the spinner. If in the case of a stock that would not be handled, which is probably exceptional, 1½ wraps might be justified if necessary for putting this lot through; otherwise I say 2½ wraps and a good firm bobbin.

"2. Should other operatives except the frame tender be allowed to repair breaks on fly frames?"

I assume that "J. R." refers to end breakages. If so, I believe that the frame tenders alone should repair their breaks or do their own piecing up, as all roving is marked with the speeder tenders' mark and they are held responsible for their work. Doffers or other operatives put on for learning purposes should piece up, etc., under the frame tender's supervision. If, however, he refers to machine breakages, then that of course is the section man's job.

"3. Does dyed cotton always require more twist in roving than white cotton?"

So far as I know dyed cotton of the same type requires more twist than white cotton due to the weakening caused by dyeing. I believe that this is especially true of black.

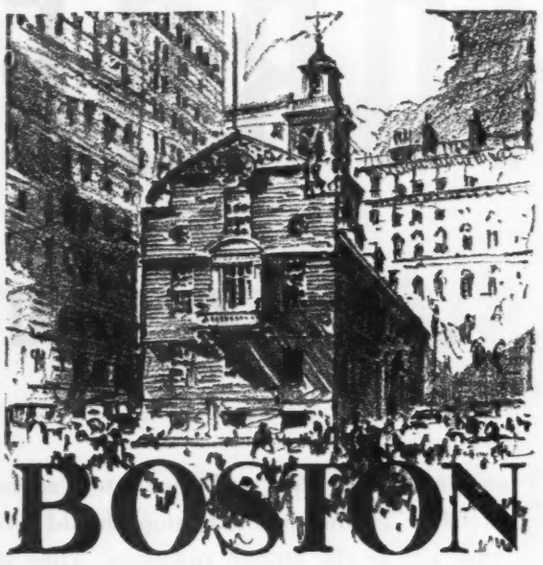
"4. Should a section man do his own oiling, or should his job be increased and an oiler put on to do this work?"

I believe that the section, where possible, should be increased and an oiler used to do the oiling, being responsible to the section hand. The rate of pay is usually less for an oiler, and by assigning a definite amount of work for the oiler it leaves the section man free for his section, and holding him responsible for the oiling gives him more interest. At the same time it permits the training of future section men.

"5. Is it best for each frame hand to mark his own roving, or should a roving marker do this work?"

When possible it is best for the doffer or roving marker to mark the doffs as this insures a definite careful marking of each doff, impartially, as the operative is not marking her own particular work. Actually doffs should be marked at sometime during the doff, usually when about ¼ full.

This man's last question asks, in case of a portion of a section running, and the section man doing other work, whether his wages should be reduced. I believe that where permissible when a section is only



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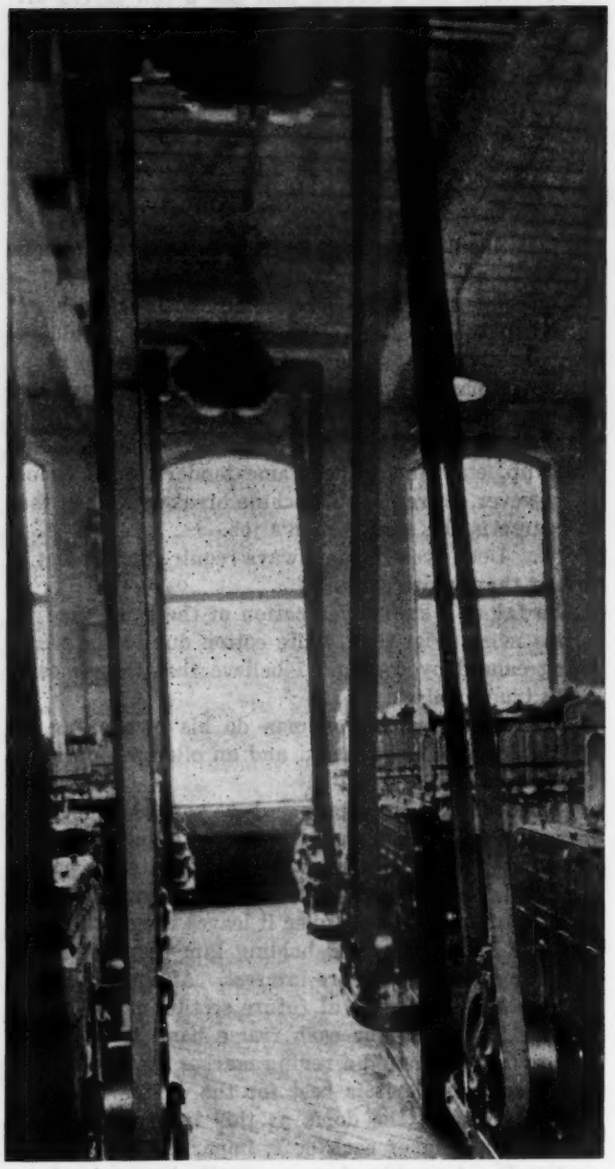

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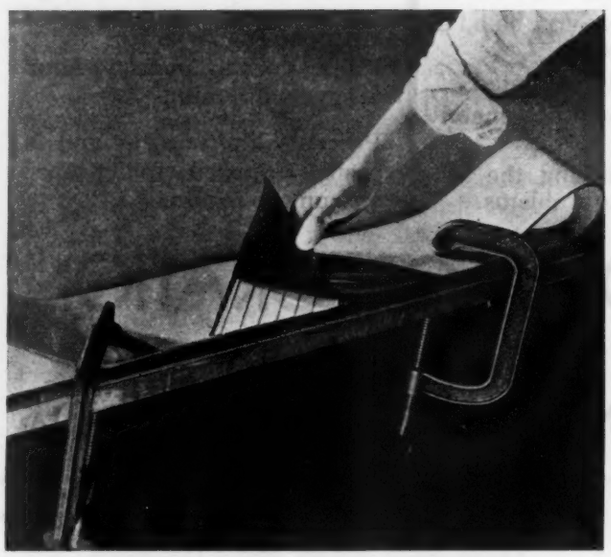

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Operator using one machine can do easily 1000 lbs. per hour.

Minimum amount of waste or dropping.

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Ideal in dye house when connected with Automatic Extractor.

One operator tends the entire unit.

Sargent's new Single Apron Dryers embody the most advanced drying theories.

Completely motor driven.

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Insures even conditioning.

Automatic in operation.

Eliminates stained yarn.

No swelling or cracking of bobbins.

Saves time, labor and storage space.

Filling goes to looms ½ hour after conditioning.

Prevents kinky yarns and is easily adjusted for proper amount of regain.

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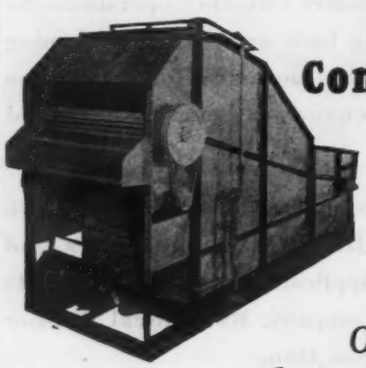

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a machine that produces 5% moisture regain at a total cost of 20c per thousand pounds of yarn. Weaving production is increased at least 1%, which is a permanent added weight, production is not held up, seconds in weaving are materially reduced, handling of filling is reduced to the minimum. The production of this machine is from three to five times that of other conditioning machines; it is permanently efficient and trouble-proof and requires only 10 x 5 feet floor space.

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partially running and the section man is doing various types of work then he should be paid at his regular rate, with every effort made to try to reduce the various items so that proportionately the expense will not be any higher than necessary. This means more contentment on the part of the section man, more endeavor, and a realization that he is getting a fair deal rather than that a very small sum of money is being saved for conditions for which he is in no way responsible. If this were to be a long drawn out process it might be advisable to reduce the pay, but I am opposed to it wherever possible, as there should be an incentive to become a section man and a sort of a guarantee when one does.

Now, since I believe the foregoing answers this man's question, I should like to ask some of my own. Quite frequently I have seen quoted in COTTON the fact that too close a setting of the flats to the cylinder results in a decrease in the breaking strength of yarn (see page 51, March issue, the article by "WASH".) Will you please have the various readers discuss this and submit breaking tests to substantiate their claims? Recently I saw a small sample put through with a close and a wide flat setting, and the resulting yarn showed approximately the same break, the wider setting giving considerable more leaf, etc., in the yarn. Therefore, I would say that the closer the setting that can be obtained the better, without a resultant decrease in the strength. Ask the various readers to actually substantiate their claims on this particular item, and not just state their thoughts without actually checking up.

CONTRIBUTOR NO. 6226.

Practical Card Room Comments.

EDITOR COTTON:

What is the cause of curled cotton? A lot depends upon where the curling is being done, but most of our curling, if traced back, will, I believe, be found at the bale breaker or breaker lapper. If the curling is found to be in the breaker lapper or bale breaker, then the draft should be speeded up a little, and the beater slowed down. I have found this to be a great advantage.

Does a card cause neps, if so, what are the causes? One of the greatest faults is over production of the card, that is, running the doffer at too high a speed; another is a dull licker-in, or a dull cylinder, doffer and flats.

Above all, the top flats should be kept sharp. I believe that the flats should be ground every time the doffer and cylinder are ground. Also the top flats and the doffer should be kept set as close as possible to aid in keeping the neps down to a minimum.

Is it a good policy to oil the speeder spindles, in other words, the bolsters, or is it better just to oil the bobbin gears? I will say that for the last two years we have been oiling only the bobbin gears, with good results; we seldom have a stuck spindle or a hot bolster.

I have mentioned only a few things in regard to the carding department. I would be glad to see some of your writers discuss these and other common card room problems. CONTRIBUTOR NO. 6242.

November 3, 1886

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laps *sewed* with lace leather—No Waterproof Cement in those days.

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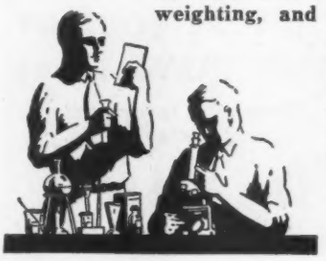

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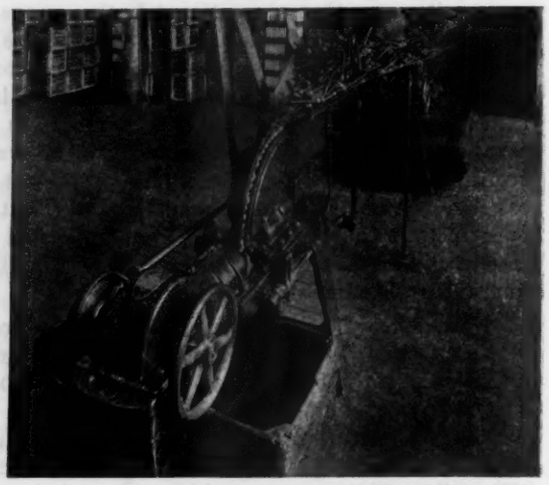

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By checking the performance of Type-K Bobbin Strippers in many mills, it has been proven over and over again that this machine is delivering the kind of service that lowers operating costs to a rock bottom minimum. "Type-K Facts" is a booklet giving "case histories" of mills you will know. Write for it.

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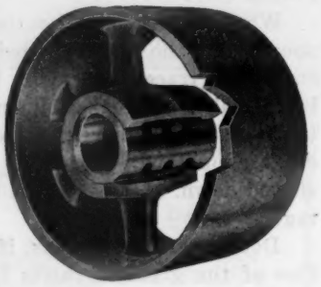

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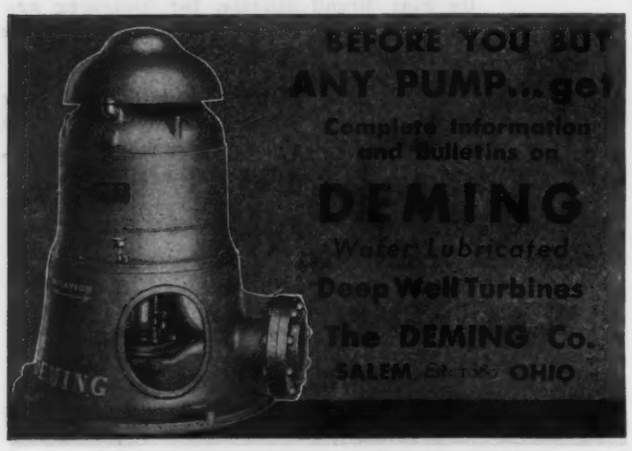

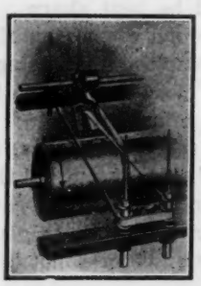

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Further Comments on Drawing.

EDITOR COTTON:

On page 64 of the May issue, "CONTRIBUTOR No. 6123" has an article, "The Care and Operation of Drawing Frames." At the end of his article he says that he hopes some of COTTON'S readers will either agree or disagree with his statements. Well, I do both.

In the first place, I prefer a six-delivery drawing frame to a four-delivery frame, which is the one he likes. I give as my reason, saving in amount of floor space, and greater production. In regard to there being more vibration in a six-delivery frame as "CONTRIBUTOR No. 6123" claims, I do not believe that there is a great deal of difference, and if a man keeps the drawing frames lined and in good repair, there should not be much trouble from this cause.

This man brought up the question of leather or metallic top rolls, indicating a preference for the metallic type. I say without hesitation, give me leather rolls in preference to metallic rolls, always; unless you are running a very low grade of goods, and quality comes second. I will say, however, that "CONTRIBUTOR No. 6123" will find, after he has used cork rolls on drawing for a while, that they are the things to use. They not only give a saving in roll covering bills, but better work will be obtained. As for having trouble with a suitable roll varnish on leather rolls, I think a little experimenting will produce a varnish that will not lick up or cause any trouble.

With regard to his preference for 12-inch coilers and spiral gears, I don't think anyone will disagree with him on these points.

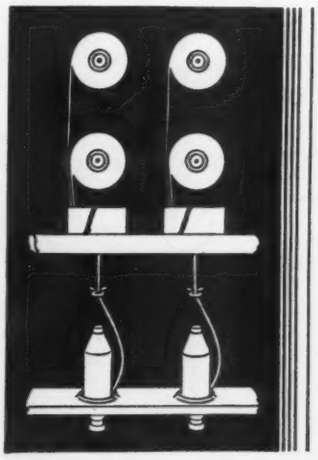
Now, about creeling. I will not disagree with the system our friend is using. He said that the creels should be set in so that no ends are crossed and the individual cams should be set in as its predecessor runs out. He declared that the habit of "cutting cans", "topping cans", etc., is next to foolishness.

However, I will merely say that we find that best results are obtained by creeling the whole drawing at one time. When the cans run out the frame is cleaned thoroughly and a full set of cans creeled in. I wish to state that we do not have to "cut" or "top" any cans to do this. One of the contributors to this department had an article a few months back on how to do this. Some mills have various systems for creeling drawing frames, and I will not say that our system is the universally best, but as stated, we are getting good results and the class of goods we are on requires evenness and quality first. I may say that we are making voiles, fine lawns, lenos and broadcloths.

When a drawing tender replaces each individual can as it runs out, you are likely to find a tender now and then that will hold the shipper, and, as OLD-TIMER calls it, "drive steers". With a careless tender you are apt to get quite a few singles. Regardless of what mill or who may have charge of the department, you will always find one or two careless operators.

We find that a roll speed on drawing of 200 r.p.m. gives us the best results, and that a drawing tender can take care of 48 deliveries very nicely.

I guess that covers about all for the drawing



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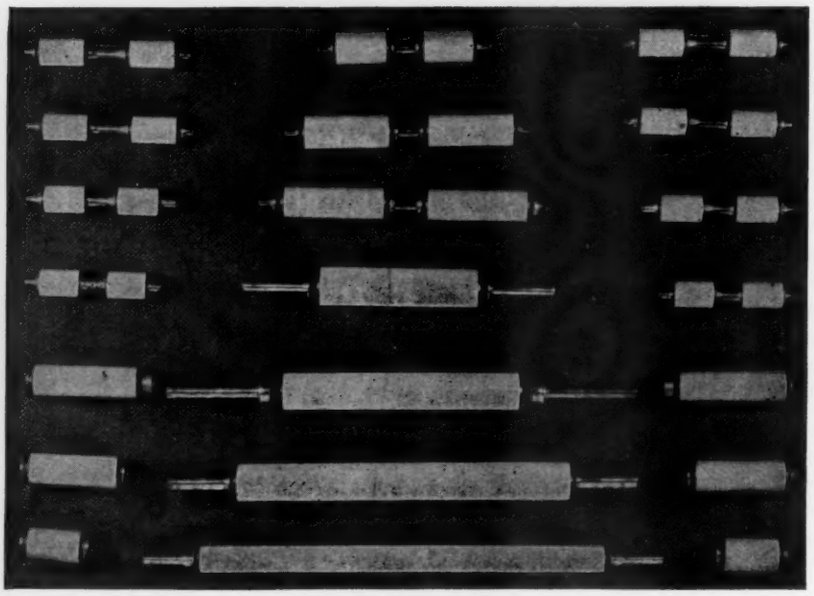

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frames and I wish to say to "CONTRIBUTOR No. 6123" that I present this in the same spirit as that in which his article was offered and will look forward to his next article which I trust will cover fly frames.

CONTRIBUTOR No. 6244.

"Wash" Submits Another One.

EDITOR COTTON:

I see that on page 59 of the May issue of COTTON another compliment has come my way. "CONTRIBUTOR No. 6195" states in his splendid article, "I think that 'WASH' starts more helpful discussion than any other person with the possible exception of 'M. W. H. (MASS.)' or 'R. G. (R. I.)' in his article in the December issue, on page 83, is no exception." Thank you, sir.

I do not agree with "CONTRIBUTOR No. 6195", for although "M. W. H." and "R. G." write splendid and helpful articles, I think that most readers will agree, that all of the contributors to this department are good.

Now, when I submitted the questions in my article in the December issue, I stated that they were easy for the practical man to answer. Here is one that is hard for the practical man and one which will floor the textile graduate:

"On a fly frame, every little while the ends slacken and then pick up again, but in almost every case a few ends break down. There is no slipping of gears in the train of gears from the bottom cone gear to the bobbin gear. The cones are tight on their shafts and do not slip. All keyed gears and keys are in perfect condition. When this condition happens, the first thing the practical man will do is to put belt dressing on the cone belt or change the cone belt, which will not help the situation."

This question is a practical one and a very helpful one, for the reason that when the foregoing condition does occur it is hard to discover.

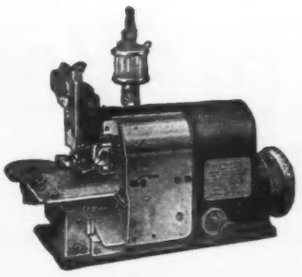
WASH (R. I.)

"Centralization of export efforts has been suggested as the first approach to a solution of some of the merchandising problems facing the cotton textile industry," according to *The Index* published by The New York Trust Company. "Success in this endeavor would undoubtedly have a stimulating effect on the domestic market and ameliorate some of the conditions that have long had a retarding influence.

"While the Sherman Act prohibits combinations that would dominate the domestic market, the Webb-Pomerene Act, with considerably more lenient provisions, permits associations for the promotion of foreign trade.

"The successful operation of such a group is a distinct possibility. There are several very efficient export houses now in existence around which the larger organization could be built. Practically all export sales methods follow certain recognized channels and it would only be necessary for the exporters to reach a common understanding as to organization and as to procedure. An effective sales agreement among the cotton textile exporters has not yet been dividualistic of all American manufacturing groups.
reached because the industry is still probably the most in-

"The constructive cooperative endeavors already undertaken to eliminate unsound trade practices and to stabilize conditions would unquestionably be strengthened through the functioning of an aggressive and capably managed export sales association. Such an organization, staffed with specialists familiar with the languages and trade customs of other nations and supported by a strong group of mill executives, should become a dynamic force in world markets."



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92. Silicates of Soda—A review of the properties of silicates of soda and their various uses. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

93. Metso — Describing this industrial cleanser which has wide use in industrial cleaning of metals, floors, etc., and is used in kier boiling, silk and rayon degumming. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

94. New Development by Onyx—Eight-page booklet describing and giving uses of new developments in sulphonated aliphatic compounds . . . called Aliphatic Ester Sulphate and Glyceryl Sulphates. Onyx Oil & Chemical Co., 15 Exchange Place Jersey City, N. J.

95. Onyx Processing and Finishing Compound Catalog—A thirty-two page booklet listing and describing entire line of processing and finishing compounds, covering every process on all types of fabric. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

96. R. & H. Non-Flammable Solvents—describing the characteristics and many uses of non-flammable solvents. R. & H. Chemicals Dept., E. I. duPont de Nemours & Co., Wilmington, Del.

97. Suggestions For The Modern Silk and Rayon Throwster — describing the various uses for Laurel Brand Products and giving valuable suggestions in silk-soaking, degumming, dyeing, sizing and finishing. Laurel Soap Mfg. Co., Inc., Tioga, Thompson & Almond Sts., Philadelphia, Pa.

98. Saving Labor, Material and Power in the Textile Industry. A 20 page booklet showing the advantages and typical installations of temperature, pressure and humidity instruments and controllers in various processes of textile manufacturing. Foxboro Co., Foxboro, Mass.

99. Bulletin 177, Temperature Controllers. 48 page booklet describing and illustrating the various types of controllers, charts, valves, etc., and their industrial uses. Foxboro Co., Foxboro, Mass.

102. White and Light Shade Cotton Fabrics Dyeing and Finishing. National Oil Products Co., Harrison, N. J.

103. Throwing Rayon Crepe. National Oil Products Co., Harrison, N. J.

104. Warp Sizing. National Oil Products Co., Harrison, N. J.

105. Mildew Prevention. National Oil Products Co., Harrison, N. J.

106. Cotton System Warp Sizing on Multiple Cylinder Machines—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk—Charles B. Johnson, Paterson, N. J.

107. Complete Information on Alemite Lubrication. Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

108. Thickening Materials for Textile Printing—discussing the more important materials and methods employed in the preparation of color thickenings so that it may be properly and economically transferred to the cloth in textile printing. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

109. Some Properties of Starch and Dextrine—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

110. 3-in-One for Industrial Uses—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

111. Roll Spacing Determinator—showing and describing this machine for cotton mills which eliminates the problems of roll setting to the mill man and determines by mechanical means the exact spacing considering staple, character, size and twist. The Belger Co., 36 Pleasant St., Watertown, Mass.

112. Belger Long Draft — describing "ELASTIX" Rolls with which drafts from 16 to 17 on carded and 20 to 22 on combed stock can be achieved without changing the spinning frame. The Belger Co., 36 Pleasant St., Watertown, Mass.

113. Card Room Testing Equipment—describing the advantages gained by having the product of the card room machinery tested in the same way as the yarn is tested in the spinning room. The Belger Co., 36 Pleasant St., Watertown, Mass.

1. Cotton Picking, Carding and Spinning—Covered by three different catalogs. Picking catalog covers Opening and Picking Machinery; Card Room catalog covers Cards, Combers and Roving Frames; Yarn Machinery catalog covers Spinning, Twisting, Spooling, Quilling and Reeling. By Whitin Machine Works, Whitinsville, Mass.

2. Pepperell Equipment—10 page illustrated booklet showing High Speed Warping from cones as adopted by Pepperell Manufacturing Company after thorough experiments, installation and product photographs. Issued by Universal Winding Company, Boston, Mass.

4. New Methods of Opening Cotton, also "Brown" Automatic Mixing and Cleaning Distributor — Illustrated booklets showing advantages of Centrif-Air Cotton Cleaning System. Pamphlets also on better picking and carding and pneumatic trunk line cleaner. Issued by Centrif-Air Machine Company, Atlanta, Ga.

10. Leathers, Textile—Booklet No. 101, 48 pages. Illustrated. Showing BONDARON Check Straps—Lug Straps—Harness Straps—Pickers—Belting, both round and flat, etc. Horsepower tables and other interesting information. By Charles Bond Company, 617 Arch Street, Philadelphia, Pa.

11. Whitinsville Rings—16 page illustrated booklet. Describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

21. Warp Sizing and Composition of Cotton—Folder containing reprints of articles carried by textile publications of interest to progressive mill superintendents. By Seydel-Wooley Co., 748 Rice St., Atlanta, Ga.

23. Practice of Rayon Sizing in American Mills, Raygomm, Lakoe Gum—Three booklets on products for sizing and finishing rayon and other textiles, presented by Stein Hall & Co., Inc., 285 Madison Ave., New York, N. Y.

25. "Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

28. Akron Belting.—Practical Rules and general information for users of belting with belting catalog. By Akron Belting Co., Akron, Ohio.

29. Continuous Card Stripper—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

30. Lubrication of Textile Machinery—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York and New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machine with general information on subject of full fashioned knitting.)

55. Interpretation of Analysis for the Layman—An eight page booklet explaining what the various terms used in fatty oil and sulfonated oil analysis mean, enabling the ordinary textile man without chemical education to interpret the various chemical analyses. National Oil Products Co., Harrison, N. J.

58. Trichlorethylene, Its Properties and Uses—a forty page booklet showing the properties and uses of Tri, with many valuable suggestions regarding its applications in dry-cleaning, spotting out, scouring textiles, etc. R. & H. Chemicals Dept., E. I. duPont de Nemours & Co., Wilmington, Del.

62. Rubber Products for the Textile Industry—a 40-page booklet giving a wealth of information on the proper selection, installation and operation of rubber belts, together with charts showing horsepower rating, pulley sizes, V-belt sizes, also information on all types of hose and rubber covered rolls used in the textile industry. Manhattan Rubber Mfg. Division of Raybestos-Manhattan Inc., Passaic, N. J.

63. S-W Paint Standardization Plan—valuable booklet telling how protective coatings can effect economies in plant operation and maintenance, describing how each surface is finished to best meet its specific needs, giving ideal lighting and sanitary conditions and economies in increased production. Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio.

64. Efficiency and Performance of SKF Roller Bearing Spindles — A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., 40 East 34th St., New York, N. Y.

65. Why Cooper Hewitt Light is Better Than Daylight—a 16-page booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Elec. Vapor Lamp Co., Hoboken, N. J.

66. Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176, describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

69. Monel Metal Equipment for the Textile Industry—a 50-page buyer's guide and catalog with more than 100 illustrations of various items of monel metal dyehouse equipment. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

75. The Facts About Armstrong's Seamless Cork Cots—A helpful book containing plain facts, cost studies based on actual mill records, expert analysis, complete details on the advantages of Armstrong's Seamless Cork Cots. Armstrong Cork & Insulation Co., 923 Arch Street, Lancaster, Pa.

78. Booklet L 1289 A—Loom Motors and Control—giving details of the low installation, operating and maintenance cost of Westinghouse Loom Motors. Westinghouse Electric & Manufacturing Company, Room 2 N, East Pittsburgh, Pa.

88. Dayton Cog Belt Catalog—a 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

90. Atwood Booklet. Describing Atwood Winders, twisters, wire swifts, and various types of feed rolls—useful to throwsters interested in learning the principal features of various Atwood machines. Atwood Machine Co., Stonington, Conn.

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Points on Looping and Seaming Full-Fashioned Hosiery

By Anthony Shenusky
Ajax Hosiery Mills

IN the manufacture of full-fashioned silk hosiery both the looping and seaming operations require a comparatively high degree of mental and physical co-ordination on the part of the operator. In addition, it is also very necessary that the operator have the power of concentration quite highly developed as her entire attention must be focused at the point of contact between the work and the machine.

Both of these operations are tremendously important because of the fact that faulty workmanship at these points affects the wearing qualities of the stocking to a very great extent.

Before the actual looping operation is begun the operator should examine her machine to make sure that it is threaded up properly and that all parts are in perfect running order. It is also very important that the machine be cleaned thoroughly each day and thoroughly lubricated at least twice a day in order to keep it in perfect running condition. No adjustments should be made on the machine by the operator, however; if something should happen to go wrong the foreman or fixer should be immediately notified.

The Looping Operation.

The operator then inspects each dozen of work carefully in order to determine that the dozen contains the full count of twenty-four stockings and that there are no mixed styles or sizes. Some operators make this check-up after the work has been looped but the proper time is logically before the work has been started, due to the fact that if mixed styles or sizes are found, the work can be turned in immediately and the matter adjusted at this point. The operator should put her name on every dozen before sending the work to the next department. This is important because it provides an opportunity to check up on any work that should happen to be defective.

Just before the footer completes the knitting of the toe of the stocking a large row of loops is made by the machine which are made so as to fit over the points of the looping machine when the work goes to the looper. This row of large loops or stitches is called a "loose course" and is about ⅜-inch from the end of the toe of the stocking.

The looper puts this loose course at the toe over the points as shown in the accompanying illustration, Fig. 1, and then where the toe narrowing touches the loose course the work is folded over double and pushed over the points of the looping machine. In the illustration the double part of the stocking that has been folded over is plainly shown in the stocking which is about ready to be removed from the machine.

The heel looping is somewhat simpler. Loose courses are again to be found about ⅜-inch from the end of each heel-tab of the stocking as it leaves the footer. The loose course of the left heel-tab is placed over the points of the looping machine and then the right tab is fitted over the left so that they coincide and the corners of the stocking match perfectly. The work then goes around through the cutter which cuts off the end of the tabs about one course above the loose course. The work then goes under the revolving brush which removes all of the fuzz before the stocking passes through the needle. If this fuzz were not removed it would clog up the needle and prevent it from functioning properly. On machines where no cutters are used the work must be unraveled by hand down to the last course which is on the points.

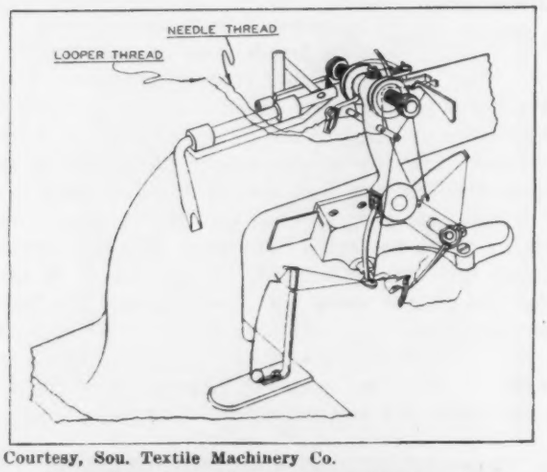
Fig. 1. Putting loose courses over looper points

Stitch Formation on the Looper.

The stocking now goes under the needle which passes through each loop tying a tiny knot as it passes through. After the work passes through the needle a thread chain of about one inch in length is made and then cut in the center so that about one-half of an inch is left on each looped part of the stocking. The stocking is then ready to be removed from the machine.

After each dozen has been looped in the manner described several stockings are examined very carefully to see if the stitch has been properly formed. For instance, if the loose course in the stocking has not been placed over the points properly with a loop on every point, drop-stitches will appear which will cause runners in the stocking when it is placed on the examining form and expanded.

In forming the stitch on the looping machine two threads are used, namely, a looper thread and a needle thread. (See Fig. 2.) The needle thread is projected through the fabric by the needle, which, due to its curved shape is held high enough for the looper to draw the looper thread under it. The needle is then withdrawn from the fabric and the looper follows the needle to make another stitch. The needle then carries the needle thread under the looper, the looper thread being held in such a position that the needle can go through it to form the loop.



Courtesy, Sou. Textile Machinery Co.

Fig. 2. Threading diagram for looper.

Adjustment of the Cutter Blade.

It is very important on a machine equipped with a cutter to see that the cutting blades are properly adjusted. If the upper blade is set too close to the work it will cut the stitches and cause defective merchandise. It is also necessary to have these blades kept very sharp so that they will make a clean cut and not pull or tear the work. This, of course, should be taken care of by the foreman but the operator should know when the cutter is not working properly in order that the work may not be spoiled.

A Perfect Needle is Vital.

The needle of a looping machine is a very important unit and should receive careful attention from the operator. If the needle is not set in the machine properly it will not pick up the stitches as it should and "drop-stitches" will be the result. If a hook develops on the needle it will cause the stitch to be cut and defective work will again result. Therefore it is quite apparent that if the operator is interested in producing the maximum amount of perfect work she will constantly watch the condition of the needle.

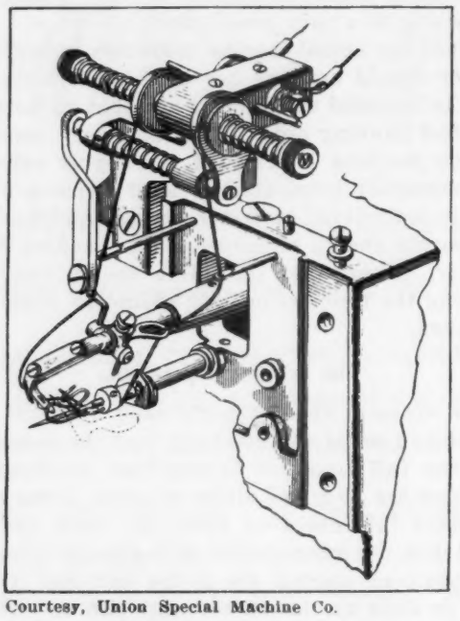
There are also several kinds of defects due to poor knitting that cause the looper a great deal of trouble. These defects, namely, high stitches in the loose course, load-ups, and tight loose course, should be called to the attention of the foreman, or overseer as soon as they are noticed, in order that the trouble may be remedied as quickly as possible.

The Seaming Operation.

After the looping operation has been completed as described above the stocking is then ready to be taken to the seaming machine. This machine is a high-speed sewing machine which sews up the foot and the leg of the stocking after which the construction of the stocking is complete.

Before the seamer is ready to begin her work she should check up carefully to determine whether the machine is threaded up properly. The accompanying illustration, Fig. 3, shows graphically how the machine should be threaded.

Again, as in looping, the importance of cleaning and oiling the machine cannot be stressed too highly. The seamer is a very high speed machine and can be ruined in a short space of time if all of its moving parts are not completely covered by a protective film of oil. The machine should be oiled four times daily with a good grade of light oil and also thoroughly cleaned once each day. Each operator should be provided with an oiling diagram in order to familiarize herself with the location of the points to be oiled.



Courtesy, Union Special Machine Co.

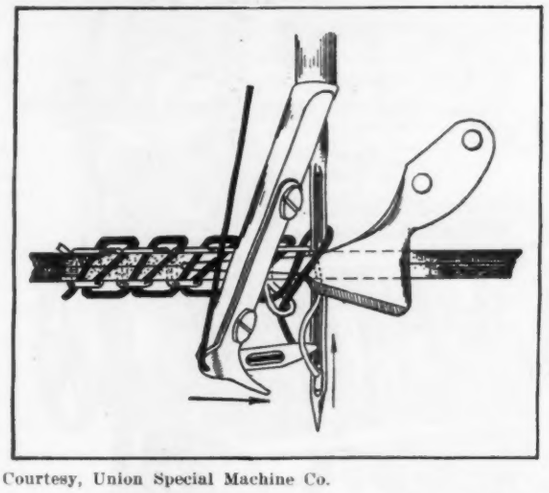
Fig. 3. Showing stitch formation and seamer threading . . . . . .

The first operation on a seaming machine consists of closing the foot of the stocking. This is accomplished by inserting the heel of the stocking in the fabric uncurler when it is in the loading position. (Fig. 4.) The two edges of the stocking are then drawn back and forth slightly in order to straighten them. Then with the needle in the backward position and the cups separated, the fabric uncurler is lowered into the operating position and

the material of the stocking is drawn in between the cups.

The work is then run through the machine which completes the closing of the foot to a point about one and one-half inches from the toe. This leaves only enough of the foot unseamed to permit removing the material from the uncurler. When this point is reached the uncurler is swung up out of the operating position and the remainder of the foot seam is made by guiding the stocking through the machine

Fig. 4. Feeding stocking through seamers.



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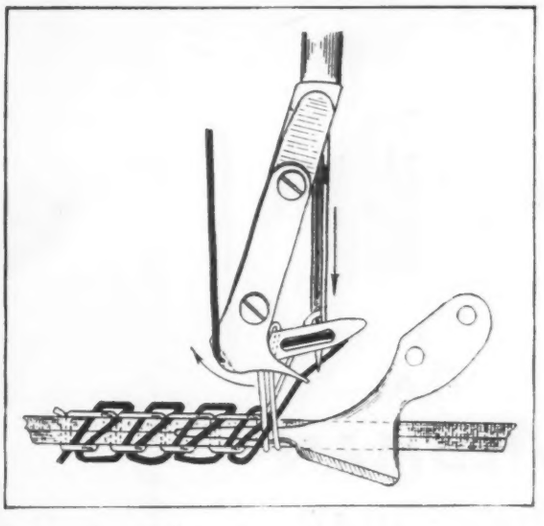


At left, Fig. 5, which, with Fig. 6, right, shows the formation of the stitch on the seamer.

by hand. After the toe of the stocking comes out of the machine a chain of stitches about an inch in length is made and then cut off of the machine.

When the machine makes stitches without having the material between the cups the operator should be extremely careful not to pull on the threads while the machine is in motion. The machine should shed the stitches from the stitch-tongue unaided by the operator, otherwise the threads will become snarled and trouble will result.

To close the leg seam the heel of the stocking is again inserted in the fabric uncurler in a similar manner as described. The chain of threads which has been left on the heel by the looping machine is then grasped and the stocking drawn between the cups against the stitch tongue. The first two or three stitches should be made on this chain in order to insure the security of the leg seam where it is joined to the heel.

The operator should be very careful to match the heel design, fashion marks, and welt perfectly. When the welt is reached the two outside plies of material should be dropped so that they will not pass through the uncurler. The operator then continues to seam on the two inner selvages of the welt. In running through the welt the stocking must be held firmly with the inner selvages a little higher than the rest. After the picot has been matched the stocking is run through the machine until it cannot be held any longer which is about one and one-half inches from the welt line. In other words, only enough of the welt is left unseamed to permit removing the stocking from the fabric uncurler. This, by the way, is one of the characteristics which identifies the stocking as being a genuine full-fashioned article.

The Formation of the Stitch.

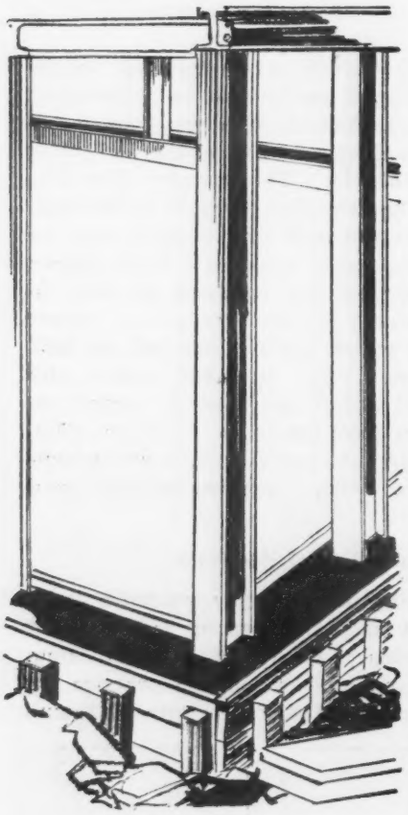
After the stocking is completely seamed a chain of stitches is again made and then cut so that about one-half inch remains on each part of the stocking.

In ordinary seaming it is common practice for the operator to help uncurl the fabric with the thumb and finger of the right hand. This is done by pushing the two edges up before they enter the uncurler blades.

In forming the stitch on the seaming machine two threads are used which are called a needle thread and a looper thread. The needle first carries its thread through the selvage of the stocking and as it starts back makes a loop such as shown in Fig. 5. The looper then brings the looper thread through the loop which has been made by the needle thread. This occurs while the needle is still inserted

(Continued on page 106.)

Forget about special foundations and buildings . . *this machine doesn't need them!*



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The
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Literature on Request

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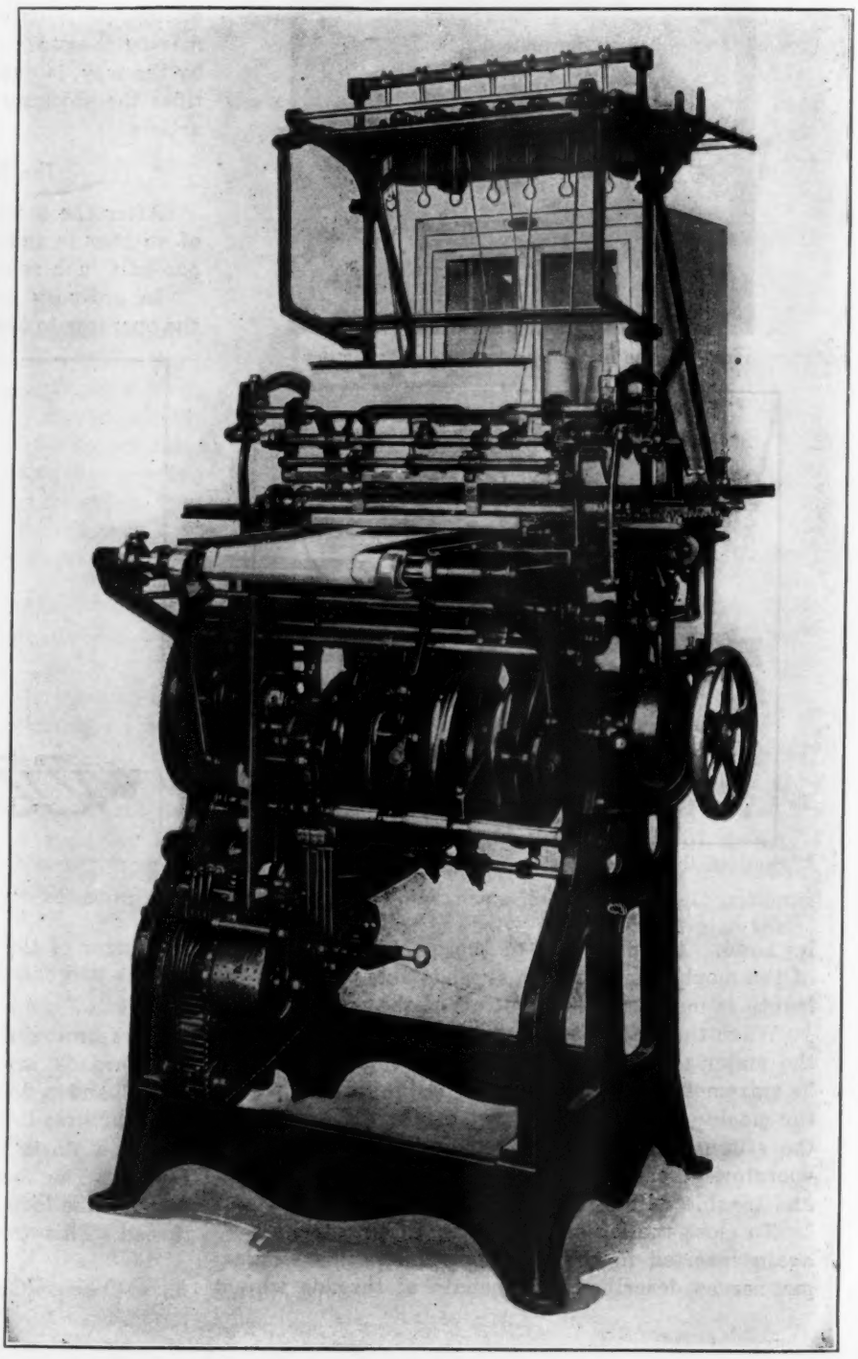

Lubricating Transfer Points and Using Oil Wicks on Seamless Half-Hose

EDITOR COTTON:

We have read the inquiry of "CONTRIBUTOR NO. 6218" as to the best means of lubricating the points on seamless machine transfer rings, also the method of applying same for obtaining the best results. This man also asked as to the results obtained from using oil wick cups on knitting machines, for the purpose of letting yarn run over the wick before being fed to the needle; and also which yarn should be used for the purpose, whether it should be one of the yarns used in the leg and foot, so as to reach all needles, or the yarn used for the heel and toe, which would reach only the short butt needles.

In reference to lubricating the points on a transfer ring, for Banner knitting machines, I would advise that the points as made are finished with a special process to leave them in a very high polish and smooth condition when completely assembled in a transfer ring, and to assist the operator when applying the rib top to the points and transferring the top from the points to the needles. I do not recall any concerns using oil on the transfer points to make the rib stitch slide freely. I do know that some firms use talcum powder or soapstone on the points to assist in smoothing up the points. Possibly your correspondent has seen a transfer assembled with points, where the points have a slight coating of oil to prevent them from rusting when not in use. This is the only reason I can see why oil should be used on transfer points.

In reference to the use of an oil wick, I would advise that all Banner machines are equipped with an oil jar assembled complete with an oil wick, this being provided for the purpose of oiling the heel and toe yarns to a sufficient degree to assist the gore stitches in reciprocating knitting to slide and move and cast off more freely on the needles. Most hosiery is made by the use of mercerized yarn in the heel and toe, and it is an established fact that by allowing these yarns to pull slightly over an oiled wick, this oil assists very materially in the stitch sliding freely on the needles, especially the gore stitch. This wick not only assists in oiling these yarns, but assists in the yarns as fed from the cones to the needles, due to two ends of yarn being fed to the needles for heel and toe knitting. This felt pad will even out the yarns so that an equal amount of yarn is being fed to the needles from both ends of yarn, and any drag or difference in tension from the cones will be between the felt pad and the cone only.

CONTRIBUTOR NO. 6230.

EDITOR COTTON:

In answer to "CONTRIBUTOR NO. 6218", who wishes to know first the best means of lubricating the points on seamless knitting machine transfer rings, also the method of applying, for obtaining the best results.

It has always been our experience that transfer rings which are in constant use seldom need lubrication of any kind, due of course to the points being clean and bright as a result of the transfer operation. However, where these points have been allowed to get dull or rusty, due to little use, lubrication and cleaning is necessary.

We first clean the ring, by submerging its points in a gasoline solution, using a fairly hard straw brush for cleaning thoroughly. After the ring is cleaned and dry we submerge it in our stainless needle oil which we use on our knitting machines, and the surplus is dried off.

All of our transfer rings are kept, when not in use, in individual bags, the points being submerged first in the needle oil to prevent rusting.

The next question that this contributor asks is, what results are obtained from the use of oil wick cups on knitting machines, used for the purpose of letting the yarn run over the wick before it is fed to the needle? Also, what types of yarn and types of work these are being used on satisfactorily.

Oil wick cups serve one purpose and that is to lubricate whichever yarn is run over the wick. This softening of the yarn makes it more pliable for knitting purposes, and also serves to lubricate the needles. We have found these oil wick cups satisfactory in every way, and can say that they cut down the percentage of waste.

All of our Banner transfer knitting machines have the heel and toe yarns run over these oil wick cups. As we knit these heels and toes fairly tight this extra lubrication of this yarn permits us to do it.

On our Scott and Williams Model K machines silk styles, we run the silk leg yarns over these oil wick cups. We find we can knit better looking fabric by doing so.

The contributor further wishes to know which yarn should be used for the purpose of obtaining the best results, that is, should it be one of the yarns used in the leg and foot so as to reach all of the needles, or

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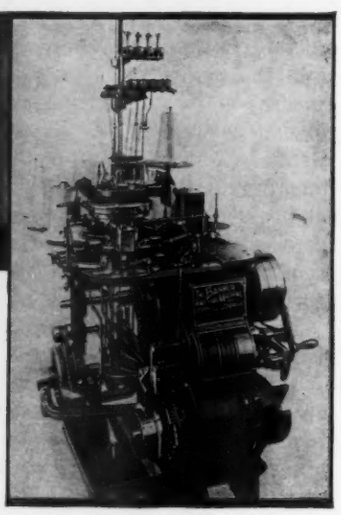
Low shoes killed the white foot stocking business several years ago. Since then, people who care for appearance have been compelled either to encase their feet in chemically treated yarns or to wear that "little white flag" above the back of the shoes which signals "Tenderfoot!" to the world. The people who *need* white feet stockings, free from dye or chemical bleaching agents, are numerous. The new Banner Low Heel White Foots enable them to wear their favorite stocking color—with white feet—and no danger of white showing above their low shoe tops. One large New York retailer says that low heel white feet socks are first choice with military men.

As a promotion item, no hosiery improvement in recent years offers the dramatic values of Low Heel White Foots in presenting merchandise to the retail customer. The public can see its advantages at a glance.



Low heel white feet half hose can only be knit on the Banner Improved Split Foot Machine. Because this machine knits the leg and instep from a single cone of yarn there are no yarn change defects, no uneven dyeing. The silk instep joins the sole with no trace of fringe. With extra reinforcements at

the points of extra wear the Banner Improved Split Foot Machine offers the most advanced half hose construction in the world.

WOOL FOOTS

People who like the feel of wool under foot with the appearance of silk on the leg can only be fitted with Banner Improved Split Foot hosiery.

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should it be the yarn used for the heel and toe which would reach only the short butt needles.

In answer to this question it is more a matter of the types of yarn and styles of hosiery to be made. If a tight stitch is required in the heel and toe, the oil wick plays an important part. The leg and foot yarn should have the oil wicks if sheer weight silk hose is being made, as it will allow cleaner knitting, and better lubrication for the needles.

CONTRIBUTOR No. 6231.

The Care and Operation of the Banner Split-Foot Machine

Article Three

(This article is the third in a series of discussions on "The Care and Operation of the Banner Split-Foot Machine." The author started the series in the first article on page 89 of the April issue. The second article was on page 89 of the May issue, and covered sinker cam adjustments. Here he takes up the carrier ring, yarn levers, cam block, center guard cam, etc., and later articles will take up other parts of this machine for practical discussion. Then it is planned to discuss other types of Banner equipment.

Readers are urged to clip these discussions in order that they may have a complete file of these articles. Copies of the first and second installments will be furnished upon request. The author is willing to answer any specific inquiries concerning these machines.

The numbers appearing in parentheses following the names of parts are those used in the manufacturers' blue print book which is furnished to operators of the split-foot machine.—The Editor.)

The Carrier Ring.

EDITOR COTTON:

The carrier rings on both old and new model split-foot machines are very much alike; in fact, many of the parts attached to the respective rings are identical. Ample adjustment facilities have been provided for carrier rings on the old model machine, and careful attention in locating the rings is necessary if results are to be expected. Enlarged holes in the carrier ring post (3070, old machine) permit proper location of the carrier ring in relation to the needles. The carrier ring should be set so that the needle hooks will clear the inside surface of the ring all the way around. If the ring is not located centrally around the needles, various troubles such as dropped stitches, worn needle hooks, bent latches, etc., will develop on account of the needles rubbing against the carrier ring surface or mouthpieces.

In addition to the ring itself, the mouthpieces (3009—16501, new machine) will also be damaged by needles constantly rubbing against them. In many cases deep grooves are worn in the respective parts making replacements necessary, and needlessly wearing out needles all because of an improper or carelessly located carrier ring. It is very important to see that the edges of the mouthpieces and the steel inserted latch openers match perfectly with the inside surface of the carrier ring where they adjoin, to prevent bent latches and other needle damage. Frequently this is overlooked when the respective parts are removed and replaced. Sufficient space must be left between the mouthpieces and the needles to permit raising and lowering the carrier ring without disturbing the needles.

In addition to locating the carrier ring so as to keep *it* and the *mouthpieces* in proper relation to the needles much depends on the height of the carrier ring. It must be kept in mind that yarn is being fed to the needles at two points and the angle at which the yarn leaves both mouthpieces to be drawn down by the needles will have a great deal to do with such troubles as mis-plaiting, fuzzy fabric, seconds and waste. On certain types of goods it will be better to keep the mouthpieces farther from the needles and set the carrier ring higher; on others it is best to have the mouthpieces nearer to the needles and set the carrier ring lower. Careful study by the machine fixer is vital so that carrier rings will be adjusted to suit the particular kind of goods being knit.

The Yarn Levers.

The yarn levers, usually called fingers by most fixers, do not require a great deal of attention, nor are they difficult to adjust. There are, however, a few things which must be considered when making adjustments or replacements. First of all, they must work freely in the yarn lever pin. The yarn lever springs (8198, 8185—new machine) should be set so that they will be directly behind each lever, making sure that they do not interfere with the free movement of each adjoining lever. Frequently if yarn changing troubles develop machine fixers will place three or more springs behind a certain lever. This practice, although it may bring temporary relief, is not commendable, for other troubles will soon develop. A better plan is to remove all the yarn lever springs, raise the carrier, and test each lever and thus find out whether the lever is at fault or not.

Yarn changing troubles can be caused by the yarn change levers (481-2-3-4-5, new machine) not working freely, or being bent so that they do not lie directly under the respective yarn levers. It is very important to check up on yarn lever and yarn changing lever relation if for any reason it becomes necessary to move the carrier ring.

Porcelain Guides for Yarn Levers.

Countless improvements have been made on Banner machines since the first split-foot and plain machines were built. The use of porcelain guides for yarn levers may seem somewhat insignificant, however, quite the opposite is true. Waste, seconds, labor cost, cost of replacing worn out yarn levers, have all been reduced through the use of porcelain guides. This is especially true where silk numbers are made, for every machine fixer knows that a yarn lever without a porcelain guide will become badly cut by silk in short order, require constant polishing and inevitable replacement. Porcelain guides will of course become worn or broken, and must be replaced, but the cost of replacement is nil, in comparison to replacing a worn yarn lever.

The Cam Block.

Illustration No. 15 in the split-foot blue print book shows the cam block (754) also the various parts attached to it. These are used on the new

machine. A similar set of parts for the old machine is shown on page 30 of the Banner catalog. Some changes in methods of mounting and adjusting the different parts have been made on the new model, however, the function of the respective parts has not been changed.

The Center Guard Cam.

Center guard cams (135, old machine; 3176, new machine) give very little trouble. They should be removed and carefully polished at regular intervals in order to avoid needle vibration and assure proper needle control at this point. Center guard cams should be set as near to the cylinder as possible, and in proper alignment, so that the outer edges of the cam do not dig into the cylinder walls. Frequently center guard cams are knocked out of position by broken needle butts or other disturbances causing badly scarred cylinder walls which will in turn cause broken needles, seconds and waste. In extreme cases cylinders may be completely ruined if the machine runs for any length of time with a center guard cam improperly set.

The center guard cam must draw the needle butts down far enough to assure their passing below the upper point of the stitch cams. If the bottom point of the center guard cam is badly worn sudden lowering of the cam block when stitch is changed does greatly affect the needle butts, which happen to be between the guard cam and the stitch cam; for this reason center guard cams should be long enough to prevent needle butts from striking the points of the stitch cams when the cam block is lowered suddenly during the various changes.

The Stitch Cams.

The extreme long life of Banner stitch cams is well known. One reason is the easy angle at which the needles travel over and under the respective cams. Other contributing factors are the excellent material of which the cams are made, good workmanship, careful tempering, and last, but not least, extreme flexibility of adjustment. On a machine where stitch cams are mounted in a more or less rigid manner, it is necessary to grind the point of a long cam in order to even the stitch with an opposite shorter cam. This of course means shortening the life of one cam in order to prolong the usefulness of its mate. Banner stitch cams on all models can be adjusted upward or downward as desired, thus each stitch cam can be used until it is completely worn out. Another desirable feature of these stitch cams is that each individual cam can be set in proper relation to the cylinder; needless to say, these adjustments are of great value on split-foot machines, since four stitch cams are used. All stitch cams as they come from the company are ready to use as is, without further doctoring, grinding or fitting. Genuine stitch cams should be used by all means.

Evening Stitch on Split-Foot Machines.

A number of factors must be taken into consideration when evening of stitch is done. Nothing could possibly be of greater detriment to the appearance of a split-foot sock than an uneven, sloppy looking heel, toe, sole or instep. Each fixer has his own ways and means of overcoming this trouble; much depends on how much attention he pays to it, and how consistently he follows it up. Some fixers, in doing this work, remove both auxiliary and regular cam blocks and set the stitch cams according to a gauge used with a surface plate. This method will put each stitch cam in a relative position as to height, but it does not make allowance for differences in sinker cam and bumper screw adjustment, nor does it account for the position of the respective raise cams. Either of these has a direct bearing on uneven stitches. Furthermore, this method calls for dismantling, assembling and re-adjusting of parts which have nothing to do with the control of the needles insofar as knitting is concerned.

Most fixers set the stitch cams by gauge with the cam blocks in position on the machine, making sure that sinker cam and raise cam adjustments are correct. Then by placing the machine in the foot, knitting a piece of fabric and examining it carefully, it is simple to determine which cams to adjust to balance the stitch and make a smooth even fabric.

Care of Stitch and Raise Cams.

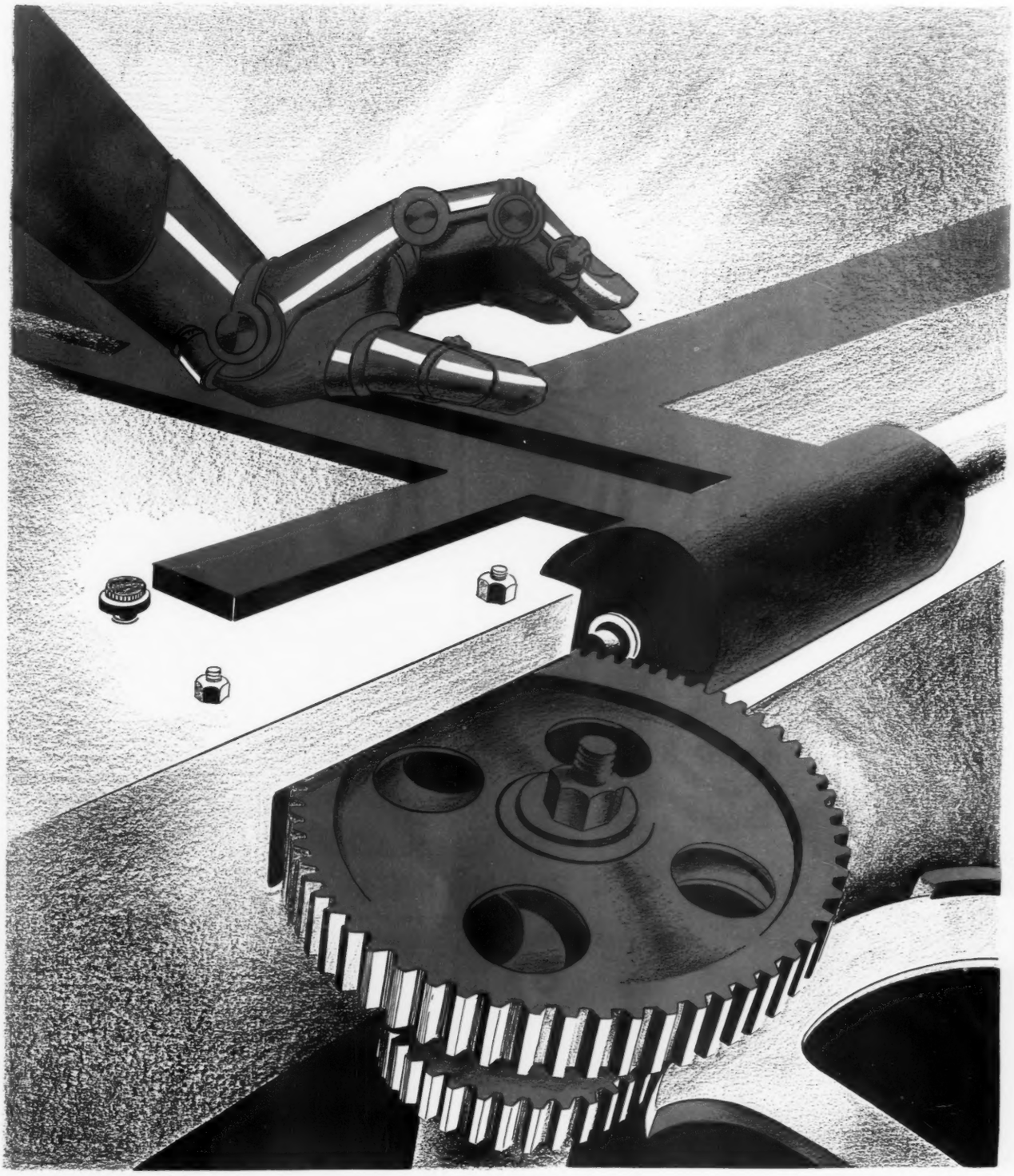
Stitch cams and raise cams on split-foot machines should be polished regularly, making sure to remove all nicks and rough places. Stitch cams should be re-pointed at the bottom when they become blunt through constant use. Careful attention is necessary in re-grinding and polishing stitch and raise cams so as not to overheat them and remove the temper, also the regular cam surfaces should be maintained as nearly as possible. Stitch cams and raise cams bear the brunt of knitting; they should be kept in A-1 condition if results are to be expected. Machine fixers often hesitate to scrap worn out stitch cams because they cost two dollars or more each, yet the same fixers may be making enough waste, seconds and poor quality goods to more than pay for a new set of stitch cams in a week's run, which will give many months of good service.

CONTRIBUTOR NO. 6206.

An "Off-Record" Discussion About Worn Striking Jacks.

ON page 79 of the June issue of COTTON we published two answers, from "CONTRIBUTOR NO. 6221" and "CONTRIBUTOR NO. 6222", to the question of "CONTRIBUTOR NO. 6214" as to worn striking jacks in the jack head of full-fashioned machines, and the best method of standardizing unevenly worn jacks in full-fashioned machines.

In the answer of "CONTRIBUTOR NO. 6222", this correspondent stated that, "An unevenly worn striking jack is rather hard for us to imagine, the only way I can conceive of for jacks to become unevenly worn is to have one of the following: (a) Tight sinkers in the brass; (b) tight jacks in the cone walls; or (c) uneven verge plates with the catch bar pushed in too far so that one or two, or several, of the sinkers



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TORRINGTON *Latch* NEEDLES

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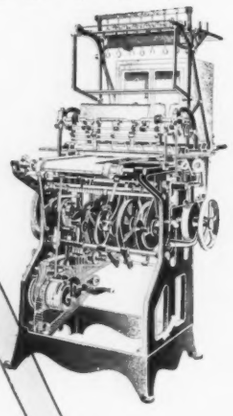
Tuned to the keenly competitive hosiery market, is this Single Head machine by Wildman. Its smooth operation is important to the makers. *Its needles are Torringtons.*

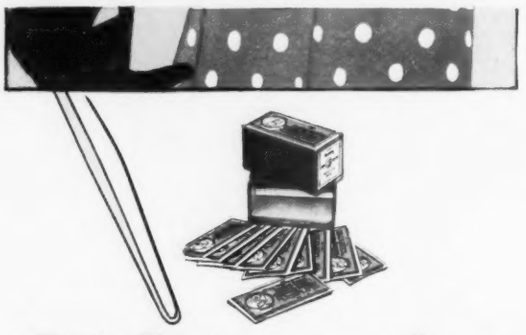


THE PRODUCT . . .

Full fashioned hosiery, made on machines equipped with Torrington needles. Torringtons, because makers of good hosiery know they need high quality equipment all the way through.

. . . AND TORRINGTON NEEDLES

Those who make machines, and those who use these machines to produce merchandise, appreciate the steady, good quality of Torringtons. You'll see these needles in "good company" everywhere; and that, to us, is a source of genuine pride.



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cannot go in as far as the striking jack should push them, therefore wearing that particular jack."

The inquirer, "CONTRIBUTOR No. 6214", in a letter published in the June issue along with the reply of "CONTRIBUTOR No. 6222", took exception to this statement, saying that "CONTRIBUTOR No. 6222" is "wide of the mark when he says that jacks wear evenly. Nothing about the machine wears evenly. The sinkers and dividers do not wear evenly."

Subsequently, "CONTRIBUTOR No. 6214" and "CONTRIBUTOR No. 6222" have engaged in a sort of "off-the-record" correspondence on this point, and for the benefit of readers who were interested in the previous discussion, excerpts of this subsequent correspondence are given herewith. The first letter comes from "CONTRIBUTOR No. 6222":

Editor COTTON: You will recall the discussion with reference to unevenly worn jacks on full-fashioned machines. It will interest you to know that I discussed this matter with (a leading machinery manufacturer) when I was in Philadelphia at the Knitting Show. He states that the advice I had given you is absolutely correct and sound, and that there is no cause for jacks wearing unevenly. Furthermore, he says that sinkers, dividers and other parts should not wear unevenly on full-fashioned machines. He also stated, as I have previously written, that any uneven wearing of jacks is caused by neglect on the part of the fixer in that he is allowing the sinker or divider which is propelled by the jack, which is unevenly worn, to stick, or else he is allowing trash or gum or bad grease to get in the cone walls and make the operation tight in that place.

I think it can be conclusively stated that unevenly worn jacks are evidence that somebody has been negligent.

CONTRIBUTOR No. 6222.

Now, when this letter was sent to "CONTRIBUTOR No. 6214", he commented as follows:

EDITOR COTTON: I note with interest the further remarks of "CONTRIBUTOR No. 6222" with reference to worn striking jacks.

I knew when I asked this question that some old expert would snap his fingers and answer out of turn before he made a thorough investigation and arrived at the facts. Now, if he will take the time to strip a jack head on any make of full-fashioned machine which has run as much as two years and gauge the jacks, he will find that they have not worn evenly. I further suspect that if he will gauge a new set of jacks before they ever run at all he will find some variance.

I would like to quote from a letter I have from the same knitting machine authority whom he quoted. This man says:

"We have found in most cases where jacks have worn excessively, the same was due to the slur cams being adjusted improperly, i. e., the slur cams are screwed up against the jacks without any clearance between the latter and the sinker backs. As you probably know, the slur cams must be adjusted so that they, when bearing against the jacks on high point, allow a clearance of .002-inch between the jacks and the sinker backs. If care is exercised to keep the slur cams adjusted in this manner little or no wear will be perceptible on the jacks or the sinkers.

"It is possible to re-finish jacks after they have been worn or cut in. This is most economically performed by taking the jack heads out of the machine and laying the same so the jacks rest against the jack axle and that part of the jack which bears against the sinker rests on a steel plate which is level, and then filing the jacks smooth with a long smooth file with a bent handle."

If the cause could have been due to the slur cams being adjusted improperly—being screwed up against the jacks without any clearance, as suggested by the machinery man—why would they wear unevenly under a uniform pressure?

Why do the sinker jacks wear unevenly?

Why do the verge plates wear so unevenly that they have to be re-surfaced every 90 to 120 days?

Why has so much research work been done on this item and fiber inserts put in the verge plates so they can be renewed?

To say that dividers, sinkers, jacks, needles, knocking-over bits, verge plates, or any other multiple parts on a full-fashioned machine, regardless of the conditions, will wear uniformly—is too absurd for argument.

If you desire further information I suggest that you write to (a needle manufacturer) about their experience in re-needling bars and overhauling sinker heads and jack heads on old machines and see if they find that these parts wear uniformly.

CONTRIBUTOR No. 6214.

This letter was forwarded to "CONTRIBUTOR No. 6222" and he commented as follows:

EDITOR COTTON: This replies to the latest communication from "CONTRIBUTOR No. 6214". In the first place, I did not start this argument, nor did I seek information on the subject. The contributor who is now so positive on his end of the subject is the very one who is having the trouble. We never had any such trouble at all. I feel somewhat complimented, however, that he has termed me an 'old expert' and I wish that I were equipped with the knowledge that some of these old timers have.

Answering these items in detail, I will state first that we have stripped jack heads and have found that the jacks are worn evenly. As far as a new set of jacks not being even is concerned, new jacks are as even as is practical and of course that is what we mean by jacks being even in the jack heads. Certainly, we would not expect them to be more even than new jacks. It seems to me that this is quibbling inasmuch as new jacks are entirely satisfactory.

As far as the letter from (the machinery man) is concerned, he is not referring to *unevenly* worn jacks, but is simply referring to worn jacks due to the slur cam being screwed up in the back too tight. "CONTRIBUTOR No. 6214" asks the question, why do sinker backs wear unevenly? We find that ours do not wear unevenly. He also asks why verge plates wear unevenly, and we find that ours do not wear unevenly. He asked why verge plates wear so unevenly that they have to be re-surfaced every 90 to 120 days. Our answer to that is that if this is being done in his plant, something is radically wrong. For the first

time, we are having some verge plates re-ground from our machines, that is, our footers, and we have had these in for over five years. Incidentally, we are making a beautiful fabric on them and the reason we are having them ground is that they are worn down very deeply and we think it is safer to regrind them before trouble starts. Incidentally, there is not a great deal of variation in the wear of these verge plates with us.

The idea of putting so much research work on the item of fiber inserts is not to prevent uneven wear, but to prevent the wearing of the soft brass and to protect with this new fiber the parts which come out against this verge plate.

I believe there is no use going further with the discussion, inasmuch as this party says that it is too absurd for argument to say that these parts wear uniformly. I don't care to discuss the matter with any man who simply assumes his answer before he starts. Our only basis for our conclusion is that our machines are over five years old and have worn evenly wherever they have worn.

I will summarize again with this statement: that if any jacks, sinkers, dividers or verge plates are worn unevenly there is something wrong in the machine which should be corrected. If the machine is kept properly adjusted, thoroughly cleaned and well lubricated, I believe that even wear will be the result. This is clearly a matter of two opinions, but I am perfectly sincere in trying to be helpful when I say that if this contributor is having all the trouble he states, then he should thoroughly investigate because something is wrong somewhere. CONTRIBUTOR No. 6222.

When this was passed along to "CONTRIBUTOR No. 6214", he replied as follows:

EDITOR COTTON: I have read with much interest the further remarks of "CONTRIBUTOR No. 6222" with reference to the discussion of unevenly worn jacks and other parts. This question was brought up for discussion solely for the benefit of COTTON'S readers who might have some trouble from worn jacks on full-fashioned machines. It of course will be of no interest to those who have no knowledge of full-fashioned machines, but to those who have, I am perfectly willing to let the argument rest as it now stands and invite them to gauge some of their old striking jacks and see if they are worn uniformly.

There is nothing to be gained by self glorification. If "CONTRIBUTOR No. 6222" is as fortunate as he claims to be, I do not envy him, for I fear that if my plant wore as evenly as his, that some bright morning it would suddenly wear out completely and I would be without a job.

His story reminds me of the golfer who had excelled at golfing on his local course and had developed just a little ego. He visited a foreign course and had an old negro for a caddy. He played a little better than his usual game and sought the praise of the old negro caddy. He turned to him and said, "Uncle, how long have you been caddying?" The old negro replied, "about 20 years". He then said to him, "Well, I suppose you have caddied for some of the best". The old negro answered, "Yes". "Well", said the golfer, "how do I stack up with them?" The old negro dropped his head for a moment and replied, "Boss, I tells you de truf; you have taken me places today I ain' never been befo."

I know "CONTRIBUTOR No. 6222" must be pretty good, but if everything is running as smoothly as he seems to think it is, he should employ an older caddy to follow him around a few days and make a new appraisal of his game. CONTRIBUTOR No. 6214.

This was referred to "CONTRIBUTOR No. 6222" who replied:

EDITOR COTTON: More important matters have prevented my answer sooner. Honestly, I think we are now wasting time. There is not a constructive thought in the reply of "CONTRIBUTOR No. 6214" on unevenly worn jacks. When it gets to be a matter of calling each other names, and alluding to "ego" because one has ventured to state facts, then where are we going?

I hope some day to sit down in a friendly manner and discuss this with "CONTRIBUTOR No. 6214", and I believe he will revise his ideas as to my being conceited, even if he does not change his idea as to jacks wearing unevenly.

I have no fear of my plant being found some day "worn out completely", simply because it doesn't wear out unevenly in some places. To check on myself, even after having (the machinery manufacturer's) personal statement to me that jacks should not wear unevenly, I have had this verified by one of our leading southern full-fashioned men. I claim no credit for the fact that our machines are in good condition; that belongs to the foreman, who took his training at the machinery manufacturers' when the machines were installed five years or so ago. Neither do I claim any profound knowledge of the business, but I have enough not to call a man ignorant simply because he differs with me. When one gets to the point that he will not listen to anyone because they differ with him, he ceases to learn. So when it is proven that jacks must wear unevenly, then I will believe it; not when a man casts aspersions at me for differing with him.

It might be that "CONTRIBUTOR No. 6214" has machines of old style with no jack springs. These are more susceptible to uneven wear than the newer type with springs. But even so, proper lubrication and settings, with thorough cleaning, should give little trouble in uneven wear.

I have ventured all of my statements only with the idea of suggesting something to help out, not with the idea of provoking a personal comparison of knowledge and characteristics, which is always distasteful to me.

CONTRIBUTOR No. 6222.

What Is Your Percentage of Re-Seamers on Chiffon Work? . . . . . .

EDITOR COTTON:

I would like to have some of your readers tell us what percentage of re-seamers they have on 3- and 4-thread chiffon full-fashioned hosiery. We have been having lately as high as .045 per cent and I thought that this was unusually high. I would appreciate some figures and comments from your readers.

CONTRIBUTOR No. 6248.

THE KNIT GOODS MARKETS . .

The Knitting Industry Under the Industry Recovery Act.

THE first task of those who have been or will be appointed to administer the industrial control law will be to "get many hundreds of thousands of the unemployed back on the payroll by snowfall".

This is set forth in the statement issued by President Roosevelt on June 16 immediately after signing the Bill, which went into operation at once. Within 24 hours the American hosiery industry, through a committee of the National Association of Hosiery Manufacturers was putting the finishing touch to tentative plans for co-operation in policies, which plans will be submitted to the enforcing authorities under the law. Their acceptance, in perhaps modified form, would leave much to be done before the industrial control machinery can be regarded as in complete working order. But, as even the members of the committee of the hosiery manufacturers who participated in the Washington conference with the administration authorities on matters of policy profess to be uninformed as to details, any definite statement as to the ultimate plans under which manufacturers will conduct their business might appear very ridiculous by the time the rough draft shall be ready for a going-over.

As the first aim of the industrial control law is to put as many unemployed persons as possible in employment, with minimum delay, it is predicted by some of the manufacturers who have given the matter considerable thought in preparation for the epochal "new deal," that the work week, at the start, will be nearer thirty hours than forty, as calling for more workers as industry gathers momentum. One reason for this suggestion is that, should a forty-hour week prove unnecessarily long, it might be a cause for fault-finding with the system were the time to be reduced materially, while on the other hand, a call for more hours of work would add stimulus to the ambitions of those enlisted in the war on depression. Progression, it is pointed out, would cause no dissatisfaction, whereas recession might.

The work week presents the simpler problem for a solution after industrial control has entered its experimental stage. Southern manufacturers of hosiery have submitted reasons for a differential in the matter of operating cost and cost of transportation to and communication with the larger markets of the North. A proposed labor differential has, of course, been discussed in committee, with precisely what result has not been revealed. It is pointed out, however, that some mills in the North recently were paying as low wages as some of those in the South not observing the average scale. It is, of course, the idea of the administration that wage rates shall be put on a more harmonious basis, which means that some will be reduced, while others will be increased. The first object, as President Roosevelt has stated, will be to put more of the unemployed in jobs.

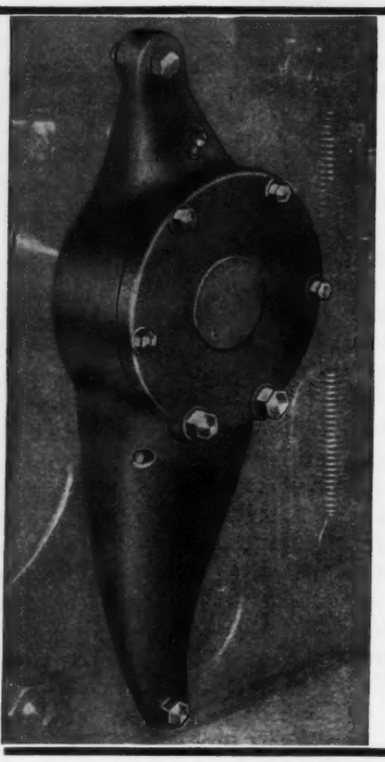
It is disclosed as one probable inexorable rule that as employer and employee as to co-operate for mutual welfare in national recovery in industry, there is to be no class distinction as between unorganized and organized interests. An employer may not decide whether an employee may or may not be a member of any organized group, and an employee who is or is not a member of any such group may not be privileged to deny the right of a fellow employee to remain in his employment because of membership or non-membership, and those dissatisfied, as representative of any group, will be likely to be not sustained in demanding of an employer the dismissal of any employee simply on the ground of affiliation with one group or another or with neither. It is maintained by students of the law that it is explicit in defining the rights of employer and employee in a manner assumed to be fair to each. As expressed by one of those in frequent conference in Washington immediately prior to the passage of the bill by the Congress, "It will be up to the employer and to the employee each individually to decide for himself whether he is to be a unit in the working out of the wonderful scheme which the President has evolved, or an outcast from the great body of workers—employers and employees. This part of the policy will be clarified as the hosiery industry buckles down to actual operating under national industrial control".

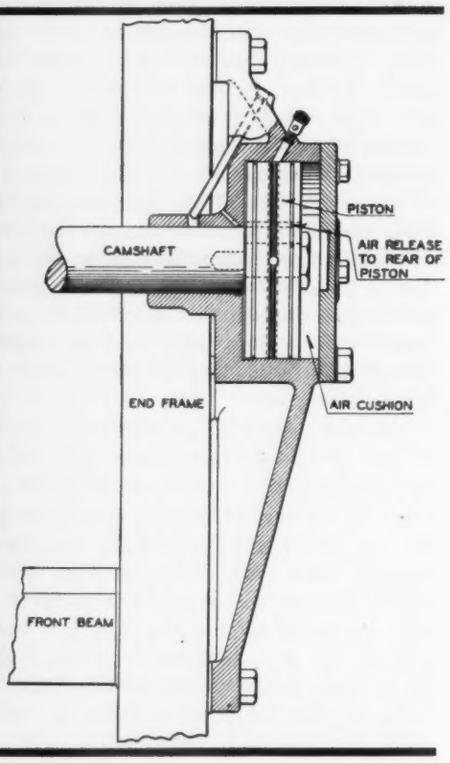
Hosiery manufacturers are at the beginning of an undertaking to do what never was seriously considered by them as a group—that is, adjust, as nearly as possible, production and effective demand. The enormity of this undertaking and its many ramifications hardly could be contemplated by persons on the side lines. The Department of Commerce classifies hosiery as cotton—men's, women's and children's, and a like range of mixtures of the several fibers; silk—seamless and full-fashioned, for men and women—and there is a very important division that is represented in infants' socks and kindred lines. The job of marshaling the many hundreds of units in the several divisions of the hosiery industry in a mass army for fighting depression is a bigger one than might at first have appeared to the sponsors of the legislation under which the gigantic work is to be carried to completion, for public good. There will be "slackers," but their number will diminish with the spread of a feeling of good-will. Besides, the law itself provides for as effective slacker control as was maintained in war time, it is pointed out in voluntarily co-operative circles.

While not all types of hosiery are seasonal in their use, production and shipments have their seasonal ruts and mounds, as is shown in a most informing manner in charts prepared by the National Association of Hosiery Manufacturers covering the period 1927-32. Net shipments of the classification

IMPROVEMENTS IN THE READING FULL FASHIONED KNITTING MACHINE

AIR-CUSHION BRAKE FOR CAMSHAFT





To insure a higher standard of perfection in operation, Textile Machine Works presents the Air-Cushion Brake (U. S. Patent 1,873,481)—designed and built exclusively for use on READING Full-Fashioned Knitting Machines. It consists of only two essential parts—(1) the housing and (2) the piston . . . Its operation is simple: As the Camshaft is shifted, the piston compresses the air trapped in the housing, forming a cushion which absorbs the shock. The air then passes slowly (through a hole in the piston) into the chamber on the opposite side where it again cushions the shock as the Camshaft is shifted back to normal position . . . Because of its simplicity, and again because it uses air as its working medium, this Air-Cushion Brake will operate satisfactorily for an indefinite period without any attention other than the lubrication of bearing and piston . . . Write for particulars.

TEXTILE MACHINE WORKS • READING PA.

of boys', children's, misses' and infants' have invariably reached their peak between February and April, dropping to the lowest level in July. Shipments of women's full-fashioned attain their peak between September and November and also are at their lowest in July. This applies approximately to women's seamless and men's half-hose, according to the graph for the six years 1927-32. Thus is made apparent the need of a flexible work week, either under agreement of manufacturers or direction of the authorities for administering the national industrial control law. And as considerable stocks, of women's silk full-fashioned hosiery, in particular, may have been accumulated during the May-June period, when manufacturers and distributors were taking advantage of lower price levels than probably will be in effect under the operations of the shorter work week, some see additional reason for a week of 30 hours or thereabout for the hosiery industry—or certain branches of it—when first industry begins, in July, to play to the "new deal".

The owners of some of the smaller full-fashioned hosiery plants have advanced the query as to how their interests are to be taken care of in relation to operation of footers and leggers. Some, for example, are geared for two shifts for leggers to one for footers, or, in any event, a division of hours whereby there is minimum lost motion in either department. The question arose, in one instance, whether a thirty-hour week would enable a given mill to continue the present ratio of legger and machine hours. Just another of a maze of problems which will have to be disposed of in setting the control machinery in motion.

Another question which was injected into the situation during the progress of the Industrial Recovery Bill to final passage has to do with small mills selling their entire product within the state in which produced. The Bill—it is pointed out, refers, under "declaration of policy", to "A national emergency productive of widespread unemployment and disorganization of industry which burdens *interstate commerce*'."

"If I ship none of the hosiery made in our mill in interstate commerce", a manufacturer suggested, "am I subject to the provisions of the new law the same as if I were shipping to customers outside of the state?"

"I think there are no loopholes in this law through which any manufacturer might crawl for evading it", was the reply of a mill man to whom the question of the proposed shipper in intrastate commerce was submitted, and who has been in frequent conference with National authorities. "We may speculate on this subject all we please and think as we please, and we will do just what the representative of the administrator of the new law tells us to do", he added.

Market Report

WOMEN'S silk full-fashioned hosiery has for some weeks been in as brisk demand as at any time in recent years. This was one reason why the market situation seemed chaotic to those making a study of conditions. Another reason for an appearance of chaos was that, in spite of demand and rising silk prices, there was little change in retail prices, and although some mills had made three to four 25-cent advances in prices of former $4 a dozen four-thread silk 42-gauge goods, some increased by only 25 to 50 cents, and the finer gauges were, in great extent, overlooked in the price revision. Thus there appeared chaos in a tranquil market.

It was common comment during the latter part of the last of the spring months and the early weeks of the month which marks the arrival of summer that there seemed plenty of business for practically all of the full-fashioned hosiery mills, were all of them in operation for five full days a week, and that many were flooded with orders while as many more were idle or operating in a jerky sort of fashion a few hours per day or two to three days a week. Comparisons were made generally of various stages of plant operation in and near Philadelphia and also of leading manufacturing centers.

As to Philadelphia and nearby, it was the consensus of manufacturers that the mills selling under their own brands directly to the retail trade made the poorer showing and had been the harder hit in matter of inadequate return from operation than those not handicapped by trademarks, and distributing through jobbers and, in a general way, selling large retail accounts—chain stores and catalog houses, for example. Was it direct selling that felt the depression the more keenly because the volume of business was not commensurate with the cost of handling so many small accounts representing a maximum credit risk? Or was it an excess of red tape in merchandising or insufficient knowledge of marketing on the part of past-masters in manufacturing?

Some Northern Hosiery Mills Operate Full 168 Hours Per Week.

While the Ajax plant was in production only five days a week, some small mills in territory suburban to Philadelphia were knitting during seven full days and nights a week. It was claimed that with a 168-hour-week output, overhead was reduced to an extent that more than compensated for the increase in the cost of raw silk, which from around the middle of February to June 15 advanced from $1.18 for 20-22 size, 85 per cent silk, to $2.36 a pound, Thus numbers of retailers with ready money were able to buy hosiery at depression figures to be passed over the counter in a presumably high price period. All the while some of the busy mills were manufacturing for stock, to take down the profits which the overhasty were handing to the stores.

Some small concerns not able to finance payrolls and silk accounts for accumulating stock had no difficulty in finding buyers of hosiery in the gray. At least two former executives of a direct-to-retailer mill which passed out a few years ago, who have been buying in the gray, offered orders aggregating 30,000 dozens in the latter part of May. Few mills could promise the deliveries and some were declining the prices offered. The buyers receive a commis-

There is no Substitute for Quality

BUYERS all over the country are swinging more and more to quality and further and further away from fictitious values. The consumer is beginning to realize that there is no substitute for quality in textile products.

The wiser mills are no longer shopping around for cheap yarns in order to meet price competition. Experience has taught them that higher quality in yarns is after all true economy. Pennies saved in cheaper yarns cost them many dollars in "seconds", running time and finished appearance.

There is no substitute for quality. B & C Mercerized Yarns are made only from carefully selected Mississippi Delta long staple cotton, minutely tested through every step from the raw cotton to the finished cone, every pound always uniform, a smoother running yarn with greater strength, elasticity and lustre — a yarn that creates apparel with that tangible, visible quality so irresistible to the buying public.

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sion from those for whom they buy the goods. One has since given up the job to become sales manager in a knit goods and notions jobbing house, where he is credited with doing a good job in the expansion of the concern's business. Which calls to mind the expressed opinion of some successes in manufacturing and marketing, that opportunity is ripe for jobbers reinstating themselves as large distributors of hosiery, underwear and knitted outerwear.

Demand for Full-Fashioned Equipment.

Interest in the acquisition of ancient models of full-fashioned machines is accepted as indicating an intention on the part of quite a few manufacturers to contribute their part to supplying the markets with cheap silk stockings. There is and for more than two months has been a sharp demand for 42- and 39-gauge equipment. Some that was offered has been withdrawn from for sale, and higher prices are asked for most of that which still is in the "for sale" list. Demand for certain types of circular machines is about equal to that for full-fashioned.

It was noted last month that at least two manufacturers of 39- and 42-gauge in Philadelphia who said they were for the time not producing because they could not sell the product at an advance over bare cost, were making changes in their mill connections, with the intention of engaging in the business on a larger scale. All straws seem to be pointing toward an intended expansion of production of low price full fashioned, in the assumption that consumer resistance to apparently inevitable increases with the rising silk market and operating under the industrial control legislation will broaden the market for that class of goods.

Claims Ringless Silk Hosiery Device Perfected and Installed in Mills.

An attachment in addition to the three-finger silk carrier is necessary for successfully knitting full-fashioned silk hosiery absolutely clear and free from the rings which have for so many years been a cause for an unnecessarily large numbers of irregulars. This is the bald statement of Paul Krenkel, inventor, who has been perfecting his combination device and now is applying it to machines in several mills for demonstrating its practicability. The Oakbrook mill in Reading will be one of the first to equip its plant with the attachments, it is sated by Mr. Krenkel.

The delay in supplying definite information of the situation as to patents pending for a certain process for knitting full-fashioned silk stockings assuring absolute elimination of "rings" due to unevenness in silk, left a considerable element in the trade skeptical of the success of the much-heralded innovation. In the first place, doubt that either of several methods had been proved a complete success was heard. Then the proposal was started the rounds of the trade that neither of the operations claimed to have been developed was patentable. Among the 100 per cent believers that the problem as to how to prevent the rings really had been solved and that the discoverers of a process could be protected by letters

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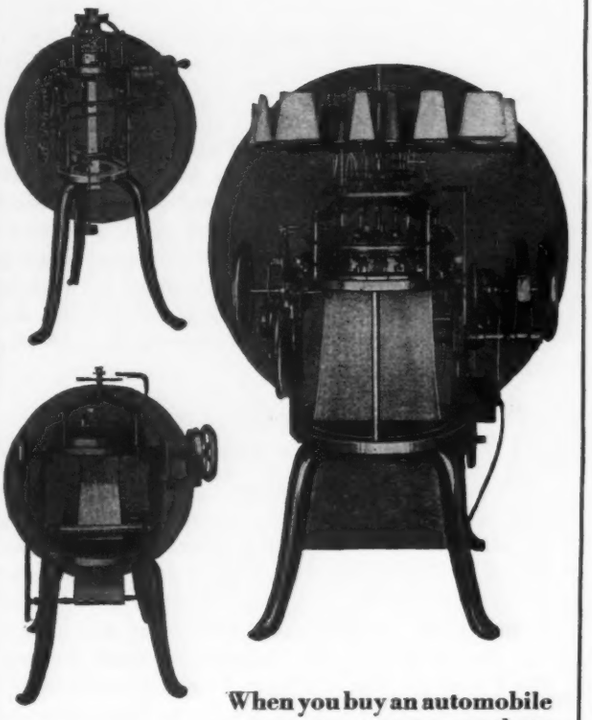

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Jersey Machines Plain and Fancy Stitches.

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Special Knitting Machines From ¼ inch to 36 inches.

When you buy an automobile —you are sure to purchase a car with a proud performance record. Why not apply the same excellent logic when you equip your mill with knitting machines? The name Brinton stands as high in its field, as Rolls-Royce, Packard, and Cadillac in the automotive industry.

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patent, the reply to the doubting ones was, "We'll see about that." In the meantime quite a few manufacturers were knitting "flawless stockings".

Originators of the idea for overcoming the defects in silk causing the rings, or "zebra stripes", say the secret leaked out prematurely, resulting in confusion among several persons and organizations each claiming prior rights as applicants for patents. What can be stated definitely is that one leading department store placed orders for the ringless with two manufacturers—the Greensboro Full Fashioned Hosiery Mills, Inc., Greensboro, N. C., and the La Salle Hosiery Co., Philadelphia—and received shipment from Greensboro well in advance of arrival of those ordered from the La Salle company.

The latter concern stated that its ringless number was knitted on a Karl Lieberknecht single unit machine and also on several legger-footer machines supplied with the three-finger devices for knitting alternately from each of three ends of silk. Later it was reported that the Karl Lieberknecht company had perfected a device which was being manufactured at a branch plant at Rosedale, near Reading. And during all of this confusion in the trade over ringless silk stockings, Paul Krenkel was at work in a demonstration shop in Philadelphia, with backing from Isaac C. Eberly, Oakbrook Hosiery Mills, Reading, and Richard Schletter, formerly of Schletter & Zander, Philadelphia.

Will 1933 Full-Fashioned Hosiery Output Equal All-Time Peak, Established in '28?

The full-fashioned hosiery industry appears amply machined, or was in 1932, according to a statement contained in the report of a recent survey of the industry by Dr. George W. Taylor of the research department of the University of Pennsylvania, in which it appears that the production last year was only little less than that of 1929, the year of peak production. The survey, it would appear, in the absence of an explanation by its sponsors, may have been intended to have a bearing on the then move for a minimum wage in the hosiery and, virtually all, industry.

Dr. Taylor's report that the enormous production for 1932 was effected with the operating of only 58 per cent of the industry's capacity tells as plainly as words could portray it, that overtime operation in numbers of plants may be very disastrous to others, for last year there were long periods of much idle equipment, as has been the case again this year.

Irregularity of plant operation was a result of over-expansion in prosperous years. The situation has been not much improved by deflation in the industry, as, accepting manufacturers' reports of equipment reduced to junk, there ought to be considerably fewer machines in place than early last year.

As strong intimations of a species of industrial control were given to the public in March, and there was foreseen a probable demand for goods pending the launching of the "new deal", manufacturers in April set about turning off more hosiery than last year. Reports from 338 identical mills show that this was accomplished, output for that month of 1933 amounting to over 350,000 more dozens than in the like month of 1932.

The increase in women's silk full-fashioned was close to 100,000 dozens, but this was more than absorbed in increased net shipments, the result being a substantial drop in the quantity of stock hosiery in mills. Women's silk seamless declined considerably in production, shipments and stocks in mills, while showing a gain in unfilled orders. An increase of nearly three quarters of a million dozens of men's half-hose in April over April of last year was shown.

Output of mens' silk full-fashioned half-hose for April was reported at 2,892 dozens, compared with 6,841 dozens in April, 1932, while in men's seamless, all kinds, an increase of around 65 per cent is shown in reports of mills to the Department of Commerce. It appears from these statistics for the first four months of 1933 that if the then stage of production be maintained during a great part of the year the 1933 production will run ahead of the peak year 1929. At the time comparisons were made, the mill reports to the Commerce Department for May and June were not available.

"New ideas" in full-fashioned hosiery are represented in a line of women's, to sell for one dollar a pair and an anklet for men, a 50-cent item at the counter. The women's stocking, from the Schuylkill Valley Mills, Inc., Spring City, Pa., is made for feet of in-between sizes, virtually quarter sizes, as in men's and women's hats. It was introduced to the trade in connection with a quotation from the Laird & Schober Shoe Co., that in women's shoes there are more than 90 sizes and lasts. The in-between-size stocking of the Schuylkill Mills is given the distinctive trade name of "accordeon foot". As it has been on the market for only a month, it is too soon for reports as to its reception.

The men's anklet is simply an abbreviated sock, with an elastic hem, and is from the mill of the H. C. Aberle Co., Philadelphia, which a year ago introduced an elastic top regulation half hose. The sock is of fine cotton construction and is knitted in the natural and solid colors. It bears the trade name "Lo-Sox".

Norman M. Wilson, who was sales manager for the Cadet Knitting Co. when it was in its prime, was recently appointed sales manager for the wholesale knit goods and notions of Joel Bailey Davis Co., Philadelphia, who created the position as a departure in wholesale distribution, in connection with a program for business expansion.

Joseph Haines, Jr., the Haines Hosiery Mills, Philadelphia, is offering to the full-fashioned manufacturers a welt turner of which he is the inventor and patentee. It is a time-saving device and enables a learner to perfect himself in its use in an amazingly short time, so simple is it in operation. Mr. Haines announces the sale of a number of the machines in the Haines plant and states he plans installation of new equipment.

The full-fashioned hosiery plant of the Siliko Hosiery Co., Philadelphia, idle for some months, is in operation to 100 per cent capacity since being taken over by the Tabor Hosiery Mills, a Delaware corporation, of which Albert Staudte is president. He formerly was superintendent of the Siliko company. The

plant comprises 36 machines.

Louis M. Kaplan, foreman of the Norbud Hosiery Mills, Philadelphia, has purchased the interest of Edward Mack, who last month established the Mack Hosiery Mills, a small plant, which for the present is knitting 42-gauge goods.

Retailers Call for Fall Underwear Deliveries; Jobbers, with No Price Guide, in No Hurry to Ship.

A right-about-face situation as between retailer and jobber is seen in this year's distribution of fall and winter underwear. Usually in early summer, retailers look askance at offerings of heavy weights, and an order is received most gleefully by almost any jobber. This year, retailers in increasing number have been willing to buy since the beginning of June, and some important concerns have sought to persuade sellers' acceptance of orders. Their anxiety has been the more perceptible from the fact that most jobbers were declining to consider prices. They could form no idea in June of what would be the cost of the goods to them, as at that time the amount of the cotton processing tax had not been designated and it was felt it might be some time after the shorter work week had been inaugurated before the increase in labor cost could be computed. So, while jobbers may have bought freely for fall, they were in no hurry to sell.

As many of the jobbers contracted early for a large per cent of their presumptive fall underwear needs, subject to addition to the invoice price by reason of the tax and increase in labor cost, numbers of manufacturers were last month having a virtual production holiday. Some were making no offerings, some who were supposed to have withdrawn prices were having a side door business, and others were openly available to buyers. In the circumstances, there was little attempt at uniformity of policy, and actual values were in great extent uncertain. Yet it seemed the consensus in the trade that the heavy weight underwear market situation in June was more nearly settled than ordinarily at the dawn of summer.

A phase of the situation that is applicable to all textile seasonal lines is, the retailers will have to pay materially higher prices for fall underwear than in 1932, and it may be the dealers will wait for consumer reaction to the advances before ordering in goods much in advance of needs for maintaining stock assortments. It is therefore not improbable that in making provision for meeting retailer requirements, jobbers may have assumed a higher cost of carrying stock than could have been contemplated, and that the more favorable position is that of the manufacturer.

The primary markets experienced a mild flurry in summer weight underwear for men, women and children. This followed acquiescence in the advances in prices of most lines, by around 10 to 12½ per cent. There was of course some resistance to the increases, and for a time numbers of retailers were placing no orders, insisting they could not meet the prices of chain stores. Consumer demand, when the temperature in northern and eastern cities was registering in the nineties on successive days, ignored price, and buying went along merrily until probably every re-

Quissett Mill
New Bedford, Mass.

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IN the textile field, as well as in most other industries, it pays in the long run to use only quality materials in the manufacture of products.

Take yarn for instance. Any weaver or knitter who has shopped around on a price basis has come back to his former quality brand. He found from experience that it is more economical in the end to specify quality yarn. It invariably means more satisfaction, more business, more profits.

Quissett Yarns are made in all counts and put up in many packages—but there is only one quality—the BEST for each type of product.

1910 QUISSETT MEANS QUALITY 1933

Wm. M. Butler, Pres.
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tailer was prepared for a continuance or recurrence of summer heat. As a broad proposition, business in light weight underwear has been quite satisfactory, and some of the Pennsylvania mills making women's cottons are taking a substantial volume of orders for medium weights, for fall delivery. It seems the experience that thus far the price increases have not been seriously felt in consumer buying.

A few of the manufacturers of men's heavy weight underwear reported requests in June from some of the jobbers for immediate delivery of goods specified for shipment in September. But they wanted September dating on such deliveries, which would imply maturities on October 10. Manufacturers sought a similar concession as to cotton yarns to be taken in prior to July 15, generally with negative results, and came back with a representation that "we understand some manufacturers are making the concession to their customers". As the yarn houses advised that any additional costs accruing on yarns not delivered before that date would be passed to buyers, the underwear jobbers are understood to have had little succes with trying to move shipments forward by two months and more.

Mills Receive Retailers' Orders in June for Sizeable Lots of Sweaters for Fall.

One of the more amazing aspects of the situation in the markets for fall and winter sweaters is the liberal buying by some of the larger department stores several months earlier than in the past several years. This may be ascribed to the pronounced upswing in the knitted outerwear trades and the fear, in consequence, that deliveries are liable to be very late against orders withheld as long as in recent seasons. Some manufacturers of the better types of sweaters for some weeks have been operating plants day and night, and swamped at that, as jobbers were calling for deliveries of sweaters for summer. This business among jobbers developed a considerable increase in June, when overdue retailer orders were pouring in, the dealers realizing, too late, in instances, for the protection of their trade, that there was no possibility of recessions from the higher prices which had been named. As indicating what these increases may mean to retailers, last month's prices for worsted yarns made it apparent that the cost of zephyr sweaters to the trade would be around six dollars a dozen higher by reason of advances in the yarn since early in the year. All types of sweaters for fall and winter will be very much higher, judging alone from June yarn values, which were still moving upward.

The knitted outerwear trade usually disregards codes of ethics adopted by manufacturers after a bitter experience with trade abuses, and more than once attempts at reform have been made, always with the same result as when "good resolutions" are on trial. Recently a representative group of eastern manufacturers took a decided stand against shipping sweaters on consignment, a practice that has prevailed for years, several times discontinued—in resolution—and as often resumed. The same practice was resorted to by some of the more important full-fashioned hosiery mills some few months ago for moving accumulations of stockings fast becoming passe.

The same group appearing for the trade-at-large against shipping on consignment is to have another meeting soon to discuss proposed discontinuance of mills selling jobbers and retailers. There has been some criticism of a Philadelphia small mill owning a large quantity of low price yarn who was quoting last year's figures on sweaters for the coming fall, to the obvious disadvantage of those knitting up yarns acquired at around current prices.

Among those who have priced their fall line on present yarn cost is one who recently was running out yarn in colors, being a remnant of a lot purchased some months ago at 50 cents a pound less than the price being paid last month.

Manufacturers selling direct to the retail trade have finished one of their more profitable bathing suit seasons, which at the start was marked by price cutting of the most vicious kind. An alleged arch-offender in this respect recently announced a fourth advance in prices.

Looping and Seaming Full-Fashioned

(Continued from page 89.)

in the material and with the feed cups of the machine motionless. The needle is then removed from the material which is in turn moved forward the proper distance by the feed cups in order to bring it into position for the next stitch. In the meantime the looper has moved backward into a position where the needle will carry the needle thread in its next forward movement over the top of the looper thread and into the material as illustrated in Fig. 6.

Seaming Requires Skilled Operators.

The seaming operation appears to be very simple when a highly skilled operator is observed feeding the stockings through the machine in an almost unbroken stream. This skill, however, is the result of long experience and the development of a highly organized sense of touch and co-ordination. If this sense of touch is not developed to a high degree there are many defects which will appear after the stockings are seamed, some of which we shall discuss briefly.

Defects Caused by Improper Seaming.

If the stocking is pulled too hard on one side a crooked seam will be the result which will cause crooked toes, heels, welts, and picots. Sometimes a small portion of the stocking will be left unseamed and a "drop-out" will be the result. "Skips" or "drop-stitches" are caused by bent or broken needle points, holding the work too high, or pulling the work too hard. A "skip" is a stitch that has been dropped in forming the chain and is sometimes caused by not setting the parts of the machine properly. Bad selvages and a hook on the needle are also sometimes responsible for "skips".

Occasionally the stitches will be either too loose or too tight. This is the result of improper tension in the machine and as it cannot be remedied by the operator the foreman or fixer should be called im-

mediately to make the necessary adjustments. Sometimes, however, pieces of cotton or silk in the tension may be the cause of a loose stitch and these should be removed by the operator before the trouble occurs.

If the work is held too high in the machine or the uncurler is set too high, heavy seams or "rolls" are liable to result. On the other hand if the work is held too low it is liable to drop out of the machine and cause what is referred to as a "drop-out". In order to prevent "rolls" the stocking should be held only as high as the edge of the uncurler guide-pin. If the work is held too high when starting the seam is liable to go over the looping, and if the work is not started near enough to the looping a hole will appear at the starting point.

The seamer must also hold the stocking loosely when feeding it through the machine because pulling too hard will cause the cups to stick and sometimes rip the selvage.

A hook on the needle will cause pull-threads and cuts along the seam. Sometimes when the work is taken out of the machine before the seam is completed a second seam is made over the first thus causing what is called a double seam.

Bad matching of heels, fashion marks and welts is caused mostly by inexperienced operators and also sometimes when the work is knitted tighter on one side than on the other. Bad selvages not only cause a great deal of trouble for the seamer but spoil the appearance of the seam and should be reported to the foreman or overseer as soon as they are noted.

Occasionally other parts of the stocking will be caught in the seam due to the fact that the work is not being held correctly. This defect is due primarily to carelessness and can be easily avoided.

We have discussed the most common of the defects which occur due to improper seaming and it becomes very apparent that most of them are caused by not holding the work properly while it passes through the machine. This can be eliminated by first learning the proper method of operating the machine and then developing the sense of touch which we mentioned previously.

It might be well to mention that quite often pull-threads are caused by both the looper and the seamer due to careless handling of the stockings as well as by rough hands, rings or any kind of jewelry that comes in contact with the work. Pull-threads may also be caused by rough edges on tables, chairs and work boxes.

As a matter of fact the efficient operation of both the looping and seaming machines can be better developed by a careful analysis of the movements that are required to perform the task. The production of perfect work depends almost entirely upon the manner in which the stocking is handled by the operator.

In order to maintain a good production in this type of work it is vitally important to know how to operate the machine efficiently and to eliminate as much spoiled work as possible. Does it not therefore seem advisable to give careful consideration to such information as contained in the foregoing discussion in order that each and every operator in these departments may attain the highest standards of production of first quality merchandise?

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REVIEW OF THE YARN MARKET

Philadelphia, Pa., June 16, 1933.

WHILE shipments of cotton yarns continued heavy through June, there appeared a slowing down in new business around the middle of the month. Manufacturers had bought freely in anticipation of added cost after July 15, and there was some contracting, of course, for anticipation of demand. A complete reversal of positions of sellers and buyers placed spinners in a quandary as to where the yarns were to come from for filling a seemingly endless flood of orders and specifications, instead of buyers in the saddle and, by means of low offers, encouraging price competition.

From the standpoint of deliveries, trading in cotton yarns in Philadelphia has seldom been so satisfactory as in the May-June period. On very few occasions since the rise in carded and combed yarns began were there any fluctuations downward, and their occurrence was not sufficient to check the interest of manufacturers manifest all along the line.

As one spinner of carded yarn after another withdrew prices or refused to consider orders for delivery later than July 1, there became apparent a feeling of alarm lest the momentum attained by the market continue longer than had been thought of, and it developed that producers had oversold their production, at unnecessarily low prices.

The rise in yarn prices from a basis of 5½-cent cotton, rapid as demand increased, went to a level where, at first blush, buyers who had overstayed their market were much put out. But a retrospect of the rise and fall of cotton reveals that by comparison yarns, which have been pretty closely following cotton, are still low. Not since the cotton year 1898-9 has a season's average for cotton, New York Stock Exchange, been lower than the ruling price in June this year, except in 1931-2, when the average was 6.58, compared with 10.71 in 1930-1.

For a considerable part of the first quarter of 1933, carded knitting numbers led in activity. Recently yarns for the weaving trades showed no less action than the knitting numbers. By the middle of June 10s single carded on cones were firm at 19½ cents, sales of spot from Philadelphia warehouse being effected at a half to one cent more, while 20/2 warps were fetching 23 to 23½, and 30s/2 were commanding 27 to 28 cents. Double carded 30s, knitting, quoted 27½-8 cents, seemed to be sidetracked for a time, so great was the demand for single carded.

Single combed peeler yarn moved in fair weights during the activity in carded, prices stiffening gradually, but not sharing in the rise as noted in carded numbers. Nor were prices for combed so firm, shading being reported in several instances in which buyers left it to sellers to name a trading price. Single 38s combed peeler were sold on a basis of 37 cents for 38s, with 32½ quoted for 30s and 28 cents for 20s.

Some action in mercerized yarns developed with announcement prices were to be advanced, subject to change on very short notice, depending on the progress being made toward operating plants under the industrial control plan. For some weeks the northern trade publications were carrying no list of mercerized yarn prices. When the table reappeared last month, prices were on a basis of 58-60 cents for 2-ply 60s, the outside figures representing what was declared to be minimum for durene yarn.

As the gap between owner control of spindles, and operating under a system of which there had been no clear conception, narrowed, traders necessarily became more conservative. Buyers felt quite safe in their commitments for future, but it was apparent spinners, mostly, wanted to start from scratch under the "new deal," and therefore aimed to minimize holdings, while some of the Philadelphia houses were seen as discontinuing buying, while reducing their stocks, leaving what stock yarns remained, in a very strong position.

Philadelphia prices published June 16 follow:

Single Skeins.

4s to 8s 19½	10s 20
12s 20½	14s 21
16s 21½	20s 22½
24s 24½	26s 25½
30s 27½	

Single Warps.

10s 20	12s 21
14s 21½	16s 22
20s 23½	26s 26
30s 28	

Two-Ply Skeins.

8s 20	10s 20½
12s 21	14s 21½
16s 22	20s 23½
24s 25	26s 26
30s 28	40s 33

Two-Ply Warps.

10s 21	12s 21½
14s 22	16s 22½
20s 23½	24s 25½
26s 27	30s 28½
40s 33½	

Frame Spun Carded Cones.

8s 20½	10s 21
12s 21½	14s 22
16s 22½	18s 23
20s 23½	22s 24½
24s 25½	26s 26½
30s 28½	40s 33½

30s double carded 28½-29
30s tying-in ..... 25 -26

Carpet Yarns.

8s and 9s white warp twist 20
8s tinged tubes 19
8s part waste 18

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s 28	20s 29½
24s 31½	30s 35
40s 40	50s 44
60s 48	70s 60
80s 70	

Single Combed Peeler Yarns on Cones.

10s 27	14s 28
16s 28½	18s 29
20s 29½	24s 30½
30s 33½	36s 36
38s 38	40s 39
50s 44	60s 46
70s 60	80s 70

Mule Spun Carded Yarn on Cones.

10s 26	12s 26½
14s 27	16s 27½
18s 28	20s 28½
24s 30	28s 31½
30s 32½	40s 38

Mule Spun Combed Peeler Yarn on Cones.

10s 32	12s 32½
14s 33	16s 33½
18s 34	20s 34½
22s 35½	26s 36½
28s 37½	30s 38½
36s 41	38s 43
40s 43½	

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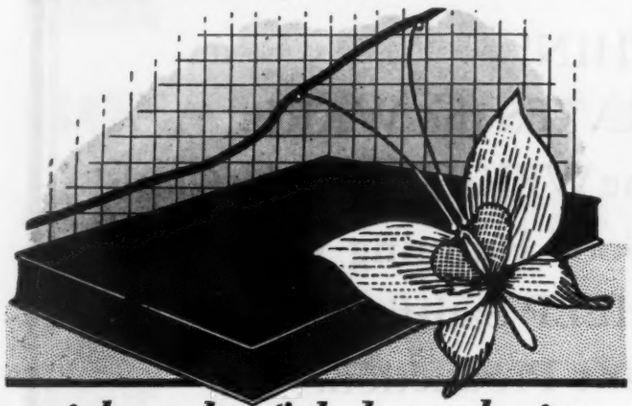

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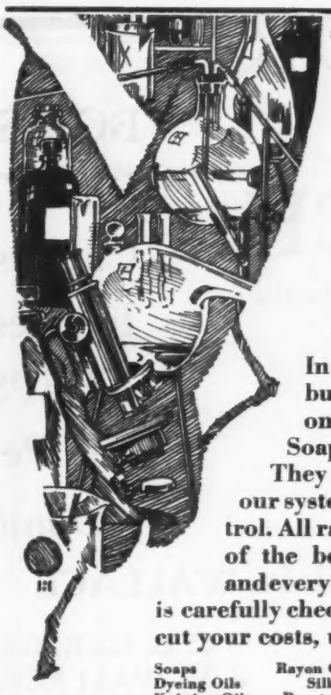

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Fulling Compounds		Scouring Compounds
Softeners		Products for Specific Processes

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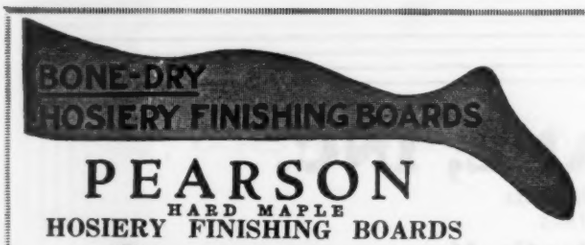

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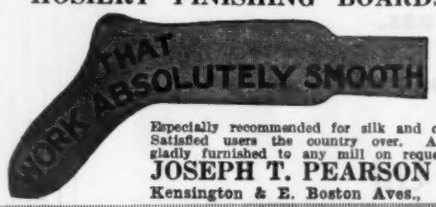
HARD MAPLE
HOSIERY FINISHING BOARDS



The famous bone-dry, unshrinkable, well finished boards that give universal satisfaction.

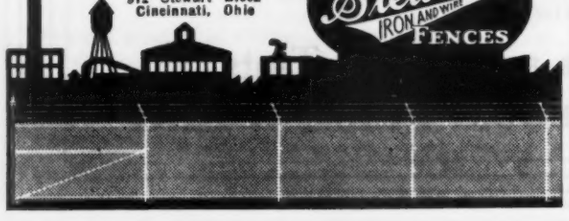
Especially recommended for silk and chiffon hosiery. Satisfied users the country over. A list of these users gladly furnished to any mill on request.

JOSEPH T. PEARSON & SONS CO.
Kensington & E. Boston Aves., Philadelphia, Pa.

PROTECTION . . .
. . starts at the FENCE LINE

and a sturdy Stewart Non-Climbable Chain Link Wire Fence, made to withstand the elements of weather, will make a definite boundary to valuable property for this year and many to come.
The cost is not forbidding—really. Write for address of local sales and erection offices. Literature will also be sent.

THE STEWART IRON WORKS CO., INC.
912 Stewart Block
Cincinnati, Ohio



SERISOL

The ideal Hosiery Finishing Oil

SERISOLVE

For excellent degumming results

CAMPBELLINE WARP SIZE

For best slasher performance

• • •

Samples and information gladly sent on request.

JOHN CAMPBELL & CO.
American Dyestuff and Textile Specialty Manufacturers
Established 1876
75 Hudson Street New York City

VICTOR MILL STARCH

"The Weaver's Friend"

BOILS THIN!
PENETRATES the WARP!
Carries the WEIGHT into the Cloth!
Insures Good Running Work!
KEEPS HELP Satisfied!
100 Percent Production!

Distributed By

DANIEL H. WALLACE SOUTHERN AGENT GREENVILLE, S. C.

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F. M. WALLACE, COLUMBUS, GA.
L. J. CASTILE, CHARLOTTE, N. C.

THE KEEVER STARCH COMPANY

COLUMBUS, OHIO

BOSSON & LANE, INC.

Manufacturing Chemists
Established Jan. 1, 1895
Works and Office, Atlantic, Mass.

High Grade Castor Oil Products
Sulphonated-Saponified

Soluble Oil — Para Soap Oil
Turkey Red Oil — Castor Soap Oil
Soluble Pine Oil — B & L Bleaching Oil

PENTRALYN, a superior assistant for Beam, Spool, Bobbin and Package Dyeing.

Bleach Softener CSO, Finishing Sizings and Softeners

VICTROLYN, the economical assistant in warp sizing. Penetrating, Lubricating and wholly efficient.

B & L Bleachers' Bluings and Violet Tints

GOOD MONEY VALUES-FREEDOM FROM WORRY

ROSANTHRENES
AND
DIAZO FAST COLORS

FURNISH

WASH-FAST GROUNDS

FOR PRINTING WITH

CIBA

AND

CIBANONE
VAT DYES

Dyes for Master Dyers

CIBA
COMPANY
INCORPORATED
NEW YORK
CIBA COMPANY, LIMITED
MONTREAL, P. Q., CANADA
Representing
Society of Chemical Industry in Basle,
Vat Dyes of the
Dow Chemical Company, Incorporated
OFFICES
IN MAIN TEXTILE CENTRES

STARCHES

Why

TEXTILE MANUFACTURERS CONTINUE TO USE . . .

THIN BOILING STARCHES
Eagle One Star
Foxhead Eagle Two Star
Eagle Three Star
Eagle Four Star

THICK BOILING STARCHES
Globe Pearl Buffalo
C. P. Special Famous N.
Hawkeye Peerless

DEXTRINS
White Dark Canary
Canary British Gum

WARP sizing as well as printing, dyeing and finishing processes offer many problems in the use of starches, dextrins and gums. The selection of the proper products is of great importance. Listed above are products available for the purposes and conditions of exacting textile manufacturers.

These starches, dextrins and gums are manufactured by carefully controlled and standardized methods. Purity and uniformity are guaranteed. Economy and efficiency are attested by the constantly increasing number of users who are getting satisfactory results.

IMPORTANT

Our research department will be glad to furnish additional information regarding the types and uses of these and other products as applied to the special needs of the Textile Industry. Write to—

CORN PRODUCTS REFINING CO.
17 Battery Place New York City

DEXTRINS AND GUMS

SOLVAY

TRADE MARK REG U S PAT. OFF.

PRODUCTS

Technical Service

We maintain in our Technical Service Department a staff of experts in Alkali. These men have studied the problems of the various industries using Alkali and know their particular and individual needs. If you have a problem affected by soda ash, caustic soda, or any other alkali that is causing you anxiety, we will be pleased to have you correspond with SOLVAY SALES CORPORATION, 61 Broadway, New York City, or with the nearest branch office or distributor. If necessary, they will be glad to send a man who has specialized on your particular problem to assist you in working out a satisfactory solution.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

61 BROADWAY, NEW YORK

SOUTHERN DISTRIBUTORS:

Charles H. Stone, Charlotte, N. C.
Woodward Wight & Co., New Orleans, La.
J. T. Sudduth & Co., Birmingham, Ala.
Miller-Lenfestey Supply Company, Tampa, Miami and Jacksonville, Fla.
Burkart-Schier Chemical Co., Chattanooga, Tenn.
Paper Makers Chemical Corp., Atlanta, Ga.; Marrero, La.

Theres a Kali Product For Every Operation in a Cotton Mill

from the spinning to its final finishing of either woven fabrics, knitted fabrics or cotton bats. Whatever your problem, ask our Research Department to help you solve it.

To reduce your soda and get a softer boil use **KAY**—Kay has slight bleaching action and if any starch is present on warps it makes the starch soluble and easily washed out.

Use **KALPINOL** (Sulphonated Pine Oil) for boiling out in kier before bleaching. It removes the natural oil and waxes from cotton. Reduces capillary action and allows alkalies to penetrate and give good even boil thus assuring quicker and more uniform bleaching.

The **KALI** Mfg. Co.

Manufacturing Chemists

1410 N. Front Street, Phila., Pa.

2 ESSENTIALS

for highest quality bleached goods at lowest unit cost—

BECCO Concentrated **HYDROGEN PEROXIDE**

Up-to-date mills all over the United States have discovered these two **modern** essentials to a superior and economical bleach. **Becco** Concentrated Hydrogen Peroxide **plus Becco** Technical Service means a careful, accurate application of peroxide to **your** bleaching requirements. The result, to which so many mills bear testimony: the highest quality bleached goods at lowest unit cost. **Becco** can be adapted to the bleaching of any fabric—raw stock, yarns, knit goods, hosiery, piece goods, specimens, etc. Write for full details.

BECCO TECHNICAL SERVICE

BUFFALO ELECTRO-CHEMICAL CO.

BUFFALO, NEW YORK

BOSTON NEW YORK PHILADELPHIA CHICAGO CHARLOTTE TORONTO MONTREAL

THE AUDIT BUREAU OF CIRCULATIONS

And Advertising Terms

The Audit Bureau of Circulations is the cutting edge of the "Truth in Circulation" movement.

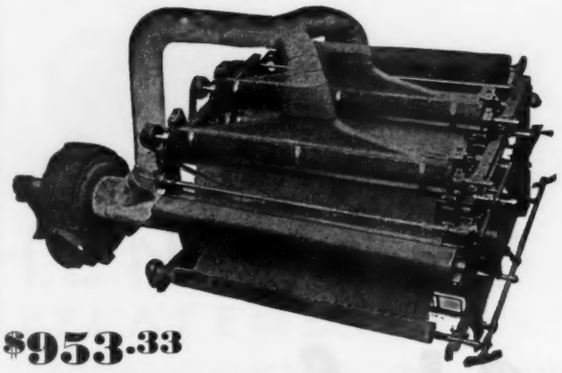
Today, nearly fifteen hundred publications of every type, published in the United States and Canada, make detailed semi-annual statements through the A. B. C. as to the size of their circulations, where they distribute their copies and how they build up and maintain their subscription lists. Every year, the traveling auditors of the Bureau visit these publications and examine and report on the accuracy of their circulation claims.

One of the most important contributions, if not the most important, which the A. B. C. has made to the intelligent sale and purchase of advertising space is the establishment of a uniform language for buyer and seller to use. Before the A. B. C. was founded, few advertising terms were used and understood in the same way by everybody. "Net paid circulation," for instance, meant ten or eleven different things. The A. B. C. has given definite meanings to words and terms. When an advertiser is comparing a number of different publications, he knows that the same word used in the report of one publication means exactly the same thing in the reports on the others.

Fair trading without standardized terms is an obvious impossibility. Because the Audit Bureau of Circulations has given advertising terms unequivocal definitions, advertisers are today able to transact business with publications, free from the dangers of misunderstanding and of being misunderstood.

COTTON

GRANT BLDG. ATLANTA, GA.



$953.33

SAVED EACH MONTH

with Hermas Automatic Shears

A large mill, using two Hermas Automatic Shears, states:

"We got rid of 20 cloth pickers by installing two Hermas Shears, with an average weekly saving of $220."

This mill saves $953.33 a month—$11,439.96 a year—and gets better work.

Other mills have effected similar savings. You can, too. Why not write today for all the facts—no obligation.

HERMAS

HERMAS MACHINE CO.

Warburton Ave., Susquehanna R. R., Hawthorne, N. J.

Southern Representatives:

Carolina Specialty Co.,
Charlotte, N. C.

HURLEY-JOHNSON CORP.

25 WALKER ST., NEW YORK

SOLE AMERICAN AGENTS FOR

JAMES KENYON & SON, LTD.
BURY, LANCASHIRE, ENGLAND

Celebrated

LAPPINGS and BLANKETS
for PRINTING MACHINES

CLEARER, ROLLER and
SLASHER CLOTHS.

For Best results in Sanforizing use

KENYON'S ENDLESS WOOLEN BLANKETS

There is Nothing like

VEG TAN

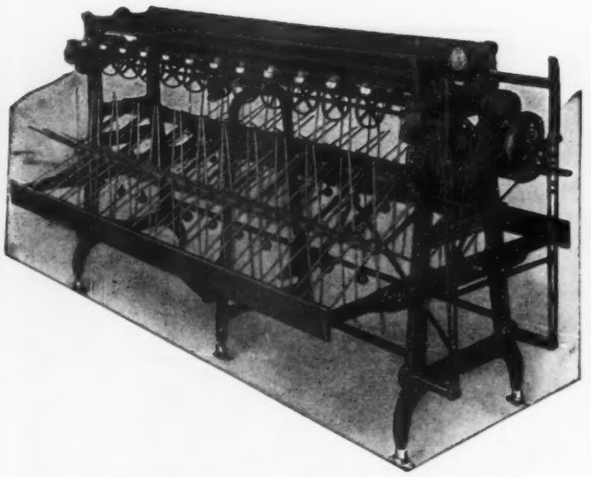
REG. U. S. PAT. OFF.

CALF

for Roller Covering

R. NEUMANN & CO.

Hoboken, N. J.



MAKE YOUR OWN
RAYON CONE SPOOLS
direct from skeins saving coning operation

Is your work being held up while waiting for delivery of synthetic yarn or cones?

Then make your own cones; use the Sipp-Eastwood 6" cone spool winder. Wind cones directly in one operation from skein.

Second quality yarns can be wound onto these cone spools for use either in making warps on the over-end system or for over-end knitting machines.

Cheap and simple to operate. Write for complete details and price per spindle. Ready for immediate shipment.

Wind direct from skein to 6" cone spool

6" cone spool

6" cone spool wound

IT'S A TRADE MARK SIPP EASTWOOD

SIPP-EASTWOOD CORP.

Keen and Summer Streets, Paterson, N. J.

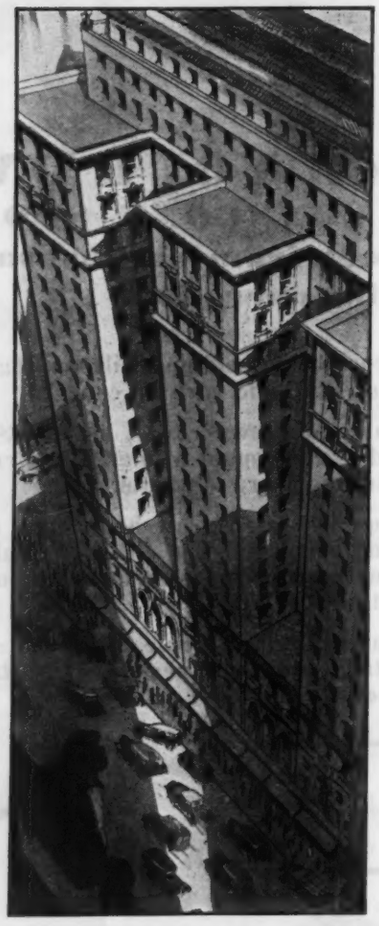
Manufacturers of high speed warpers, over-end cone creels, oil-less bearing winders and redraw frames, quillers, re-beamers, edge warpers, and folding and measuring machines.

Representatives

SOUTH: Carolina Specialty Co., Charlotte, N. C.

GOING TO

NEW YORK?



NEVER HAS SUCH A FINE HOTEL
OFFERED SUCH REASONABLE PRICES

ROOMS—delightfully furnished in the early Colonial period from $4.00. Breakfast in bed if you wish, 75¢. Luncheon in the famous Roosevelt Grill $1.00. Only the prices have been reduced. Roosevelt standards of service and courtesy have been rigidly maintained.

The ROOSEVELT
Edward C. Fogg, Managing Director
Madison Avenue at 45th Street New York City

A UNITED HOTEL

Value
When YOU Go To
PHILADELPHIA

600 ROOMS AND BATHS

A Room and a Bath For Two and a Half

$2.50 *Single with Bath*
$4.00 *Double with Bath*

WE HAVE THEM AT
HOTEL
PENNSYLVANIA
39th & CHESTNUT Sts., PHILADELPHIA

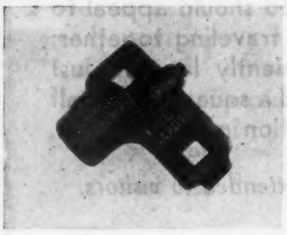
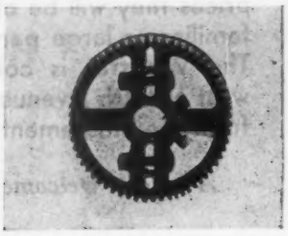
HENDERSON
REPLACEMENT PARTS

Many mills are now overhauling their machinery and putting it in efficient operating condition. They are taking advantage of present low prices on replacement parts.

HENDERSON Superior Repair Parts are of the Highest quality materials and made from precision patterns—parts you can depend upon for time-saving installation and long, trouble-free service.

Drop us a line and let us quote you attractive prices on any parts you desire.

HENDERSON FOUNDRY & MCH. WORKS
HAMPTON, GEORGIA

ATLANTA HARNESS & REED MANUFACTURING CO.

MANUFACTURERS OF

HARNESS
COTTON — MAIL EYE
SELVAGES
SPECIAL TWIST CABLE

REEDS
COTTON — DUCK
ALL METAL
SLASHER-COMBS-STRIKING

NUMBERED DUCK ALUMINUM HEDDLE FRAMES

All Types Heddle Frames and Heddle Frame Parts
Standard Flat Steel Heddles

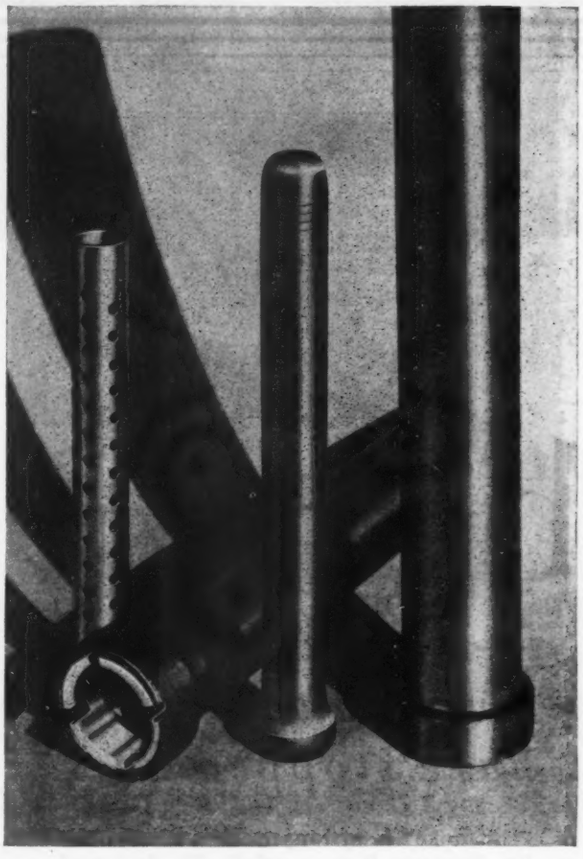
Satisfactory Service Since 1919

Main 0517-8 ATLANTA, GEORGIA P. O. Box 1375

DENMAN
BUMPERS and HOLDUPS

famous for uniformity, toughness, durability and trouble-free service. Bunters and holdups are of the famous Denman structure with three times the life of leather. The frog and starting handle bumpers are of semi-soft rubber composition unaffected by atmospheric conditions. Write for prices.

DENMAN TIRE & RUBBER CO., Warren, Ohio.
Sou. Rep.: Terrell Machine Co., Charlotte, N. C.
Rep. for N. J., Pa., and Southeast N. Y., Fisher Textile Pur Co., 269 S. 59th St., B-302, Philadelphia, Pa.



Here they are!

and here's what mill operating executives say about

"Adolff"
FIBRE CARDROOM BOBBINS

KNOWN THE WORLD OVER
ALL ABC PRODUCTS HAVE THIS MARK

• • • •

"They will not split. They have a metal guard in the butt which prevents them from wearing out at that point. The butt will not frazzle out like that of a wooden bobbin, and for that reason is cleaner. We find the finish on these bobbins so hard that it will ruin a knife edge. For this reason there is practically no roving cut off these bobbins."

• • • •

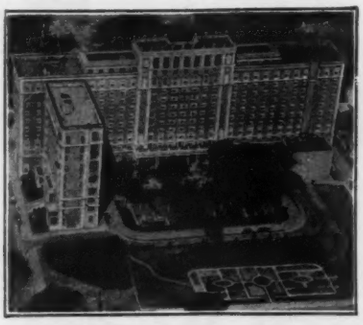
"They are the cleanest bobbins we ever had in the card room. We never have to clean them out. Moisture does not affect them. You will never find any of these fiber bobbins jumping up on the spindle Oil does not affect them."

• • • •

PARALLEL PAPER TUBES, PLAIN and PERFORATED
AUTOMATIC LOOM BOBBINS
SPINNING BOBBINS

Samples and Prices from

ADOLFF BOBBIN COMPANY, INC.
572-576 DAVIS AVE.
KEARNY, N. J.



biltmore

— a name that means much to those who have stopped here

"Biltmore" is synonymous with livability, because it was originally designed to please guests who appreciate the finer things of life. Dignified surroundings . . . precise, efficient service . . . comfortable luxuries . . . aloof from the bustle of noisy traffic and crowds . . .

Yet the Biltmore is easily accessible to the business center, theatre district and all railway stations.

Reasonable Rates:

(No court rooms)

Single, $3, $4, $5

Double, $5, $6, $7, $8

Room Reservations for how many?

Popular Priced Meals Served In All Dining Rooms

COFFEE SHOP:	Club Breakfast 40c, 50c and 60c. Plate lunch 50c and 75c. Table D'Hote Dinner $1.00.
MAIN DINING ROOM:	Club Breakfast 65c and 85c. Luncheon $1.00. Table D'Hote Dinner $1.50.

ATLANTA BILTMORE

"The South's Supreme Hotel"

Personal Letter from

F. W. BERGMANN, Manager

HOTEL WEBSTER

40 WEST 45th ST., NEW YORK

During the years of 1929 and 1930, it was my privilege to act as host to many readers of Cotton, while acting as Manager of the Hotel Shelton, New York. Prior to my connection there, I was also Manager of the Hotel Pennsylvania, New York.

In my new association with the Webster, I find myself fortunately situated in being enabled to offer Cotton readers unusual rate reductions, especially for two and three-room suites. The accommodations at the prices they will be offered should appeal to families or large parties traveling together; The Webster is conveniently located just west of Fifth Avenue and a square and a half from the amusement section in Times Square.

A cordial welcome is extended to visitors.

WORLD'S FAIR

The Bismarck Hotel is in the heart of Chicago . . . . next door to theatres, shops and office buildings . . . . only ten minutes from the Fair grounds.

The Walnut Room, Bierstube, and Coffee Shop are delightfully air-cooled. The rooms are large and comfortable, with wide beds, silent mail signals, and circulating ice-water. Your car garaged at sensible rates.

Write for map of Chicago and Fair Grounds.

All outside rooms, $3.50 up. Without bath, $2.50

BISMARCK HOTEL

OTTO K. EITEL MANAGER **CHICAGO** RANDOLPH AT LA SALLE

ROY GRINDERS for IMPROVED STOCK.

ROY GRINDERS for ECONOMY.

All Makes of Grinders Promptly and Thoroughly Repaired

B. S. ROY & SON COMPANY

Established 1868

Worcester, Mass., U. S. A.

Things are happening in WASHINGTON

Connecticut Avenue at L Street

. . . Shifting Political Scenes Attract Business Men as Well as Hordes of Sightseers . . . When You Come, Make Reservations at the Hotel Where Government Personages Reside and Great Events Occur.

THE *Mayflower*

Single rooms from $4
Double rooms from $6

R. L. Pollio, Manager

WASHINGTON, D. C.

The Extra-wear Spinning Ring

DIAMOND FINISH

Reach faster production through superior rings!

It is today recognized that spinning and twisting machinery speeds are held down by the limitation of the traveler-and-ring combination. Give serious thought and study to this production "bottleneck"! In your search for high-speed rings, note particularly the dimensional accuracy, even hardness and new high polish of DIAMOND FINISH—our sole product for 60 years.

Free samples upon request

Whitinsville (Mass.) SPINNING RING CO

Devoted to making "DIAMOND FINISH" Spinning and Twister Rings since

1873

Pays Twice Its Cost

A Loper contract contains the guarantee that its service will pay you at least twice the amount it costs you.

Let us give you references that prove we accomplish even more than we guarantee.

Fully 25% of All Cotton Textile Spindles in the U. S. are operated on the Loper System.

Ralph E. Loper Co.

INDUSTRIAL ENGINEERS

Specialists in Textile Cost Methods Over 20 Years.

FALL RIVER, MASS. GREENVILLE, S. C.

Arguto NON-METALLIC

20 years without a drink—

"First bought 'Arguto' bearings 25 years ago . . . still buy them because they're alright."

—unsolicited testimonial

ARGUTO OILLESS BEARING CO.

Wayne Junction, Philadelphia, Pa.

Weimar Bros.

Phone Connections

Works: 2046-48 Amber Street

PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

TRADING POST EXCHANGE

BUSINESS—EMPLOYMENT—EQUIPMENT—PROFESSIONAL CARDS—OPPORTUNITIES

DISPLAY RATES

Rates are net, payable in advance each month. No commissions or discounts. Page is 3 columns, 10 inches deep—30 inches to page. Space measured by even inch vertically by 1, 2 or 3 columns in width. Column width 2¼ inches. Rates based on the total space used in one year.

	Per Inch		Per Inch
1 inch	$5.00	15 inches	4.20
3 inches	4.80	20 inches	4.00
6 inches	4.60	50 inches	3.80
10 inches	4.40	100 inches	3.60

UNDISPLAYED

Advertisements set "Want ad" style. Positions wanted .05 word per insertion. Minimum charge $1.00 per insertion. Cash with order. All other classifications .10 word per insertion. Minimum charge $2.00 per insertion. Advertisements of equipment, for sale, rent or wanted and professional cards are accepted at display rate only.

Box number addresses care of COTTON, Grant Bldg., Atlanta, Ga., count as eight words.

FOR SALE:

Modern, One Story, Saw-Tooth Roof, Brick and Concrete Mill

heavy weaving and finishing plant—approximately thirty thousand square feet—land about three and one-half acres—main highway—complete in every respect—industrial center North Carolina. Address Box 106, care of COTTON, Grant Bldg., Atlanta, Ga.

POSITION WANTED

Mechanical Engineer—Experienced lay-out, construction and maintenance of power plants, gas plants and ice plants. Location immaterial.

W. E. OSTERHOUT,
130 Walker St. S.W. Atlanta, Ga.

POSITION WANTED

As Master Mechanic, experienced in steam and electric, A-1 reference, ten years experience. Address, D. L. R., care of COTTON, Grant Bldg., Atlanta, Ga.

J. PRESTON SWECKER
PATENT LAWYER

1101 Earle Bldg., Washington, D. C.

IDEAL MACHINE CO.
BESSEMER CITY, N. C.

Repairers of

SPINDLES--FLYERS--STEEL ROLLS

SPINNING SPINDLE WHORLS RE-CUT
SPINNING STANDS REAMED
DRAWING ROLLS RE-COLLARED

Do You Want to Sell It?

Probably you, like many other mills, have some equipment which you have taken out or are thinking of taking out and replacing with new equipment. Why not dispose of this second-hand machinery at a profit? COTTON is read by thousands of cotton mills that are hardly touched by Northern journals.

You Can Sell Your Second-Hand Equipment

to these mills through advertising in the Trading Post Exchange of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable way? Tell us what you have for sale and let us insert an advertisement.

Cotton, Grant Bldg., Atlanta, Ga.

It's Just Sound Business

To consult with us, whatever your machinery requirements may be.
Our intimate knowledge of the used textile machinery markets, together with our desire to be of service, places us in position to serve you most efficiently.
Let us show you just what we mean.

We are in the market for good used machinery. Send us a list of what you have to offer.

JONES MACHINERY COMPANY, INC.

K. L. Jones, Pres.

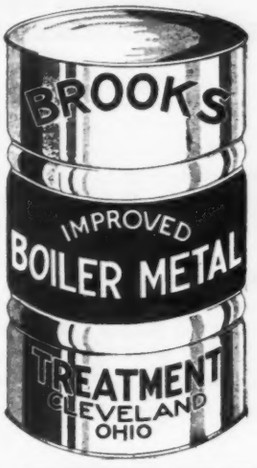
ATLANTA, GA.
C. & S. Bank Bldg.
Walnut 9196

PROVIDENCE, R. I.
Industrial Trust Bldg.,
Plantation 3642

DOWN STEAM COSTS GO

Less coal and lower boiler room expense assured when you KEEP all scale out of your boilers.

THERE is no longer necessity for using expensive water softening equipment to eliminate boiler scale. The use of turbining and rattling methods weakens the boiler, and chemical solvents often react harmfully on the boiler metal.
BROOKS IMPROVED BOILER METAL TREATMENT is the modern, economical way. It does not work chemically but works mechanically, creeping into the scale crevices and expanding between the scale and boiler metal, wedging the scale off and leaving a thin, heat-conducting film on the metal to which further scale cannot adhere. It cannot injure the boiler metal, stops pitting and any galvanic action. No odor or impurity is carried over into the process steam. Furthermore, it is economical and easy to use.



TRIAL OFFER

Test BROOKS IMPROVED BOILER METAL TREATMENT in your own boilers for 60 days. If it does not do all we claim, return the unused portion and receive full credit.

THE BROOKS OIL CO.
CLEVELAND, OHIO

GUARANTEED BY BROOKS OIL CO.

AN UP-TO-DATE PRINTING PLANT

equipped with modern machinery and a staff of competent workmen, solicits, thru this publication, a trial order on your printing needs.

We have built a reputation that is known over the entire South by our special attention to the minutest detail.

We are more than ready to answer any question that relates to your printing problems.

Write us and let us quote you on anything from a postal card to a full bound book.

The A. J. Showalter Co.

PRINTERS AND PUBLISHERS
DALTON GEORGIA

Study this machine..

It will not take you long to see where it makes a considerable saving in time, money and power—because it is 50% more efficient. The Centrif-Air Adjustable Cotton Cleaning System will make an impression on you with its three separations—the use of mechanical and centrifugal force to open cotton and remove dirt—air to take out dust and pulverized leaf—the use of centrifugal force, air and gravity to free cotton from the heavier foreign matter.

You will find many exclusive features in the Centrif-Air—the vertical adjustable separator, the brass corrugated beaters, the vibrating top comb shaft and the dust suction hood. Write for details.

THE CENTRIF-AIR MACHINE CO., INC.
ATLANTA, GA.

THE CENTRIF-AIR ADJUSTABLE COTTON CLEANING SYSTEM

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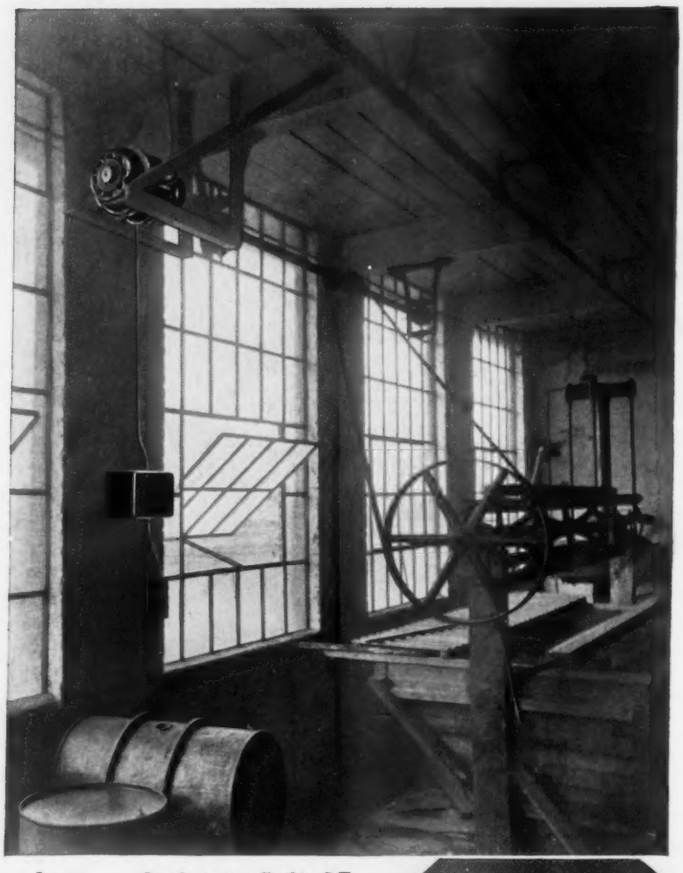

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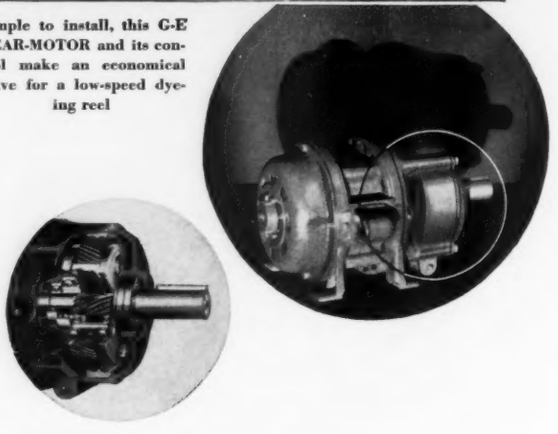

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